

ERRATA IN VOL. III.

P. 331 line 11 from bottom, for "Norman" read "Roman".  
" 335 " 10 " " " " "Ethnical" " "Ethical".

THE JOURNAL  
OF THE *N. M.*  
ANTHROPOLOGICAL INSTITUTE  
OF  
GREAT BRITAIN AND IRELAND.

FEBRUARY 4TH, 1873.

Colonel A. LANE FOX, V.P., *in the Chair.*

The Minutes of the last Meeting were read and confirmed.

JOHN STRUTHERS, M.D., Professor of Anatomy in the University of Aberdeen, was elected a member.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

From the EDITOR.—The Food Journal, for January, 1873.

From the EDITOR.—Zeitschrift für Ethnologie, Berlin, 1872.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscow.

From the SOCIETY.—Proceedings of the Royal Society, vol. 21, No. 140.

From the AUTHOR.—On Australian Kinship. By Lewis H. Morgan.

From the EDITOR.—La Revue Scientifique, Nos. 28, 29, and 30, 1873.

From the ASSOCIATION.—Journal of the East India Association, vol. 6, No. 3.

From the EDITOR.—Bulletin de l'Athénée Oriental, Nos. 13, 19, 1869.

From Prof. A. ECKER.—Archiv für Anthropologie, Band v, heft iv, 1872.

From the INSTITUTION.—Journal of the Royal United Service Institution, No. 68, 1873.

From the INSTITUTE.—The Canadian Journal, vol. 13, No. 5, 1872.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris, tom. 6, fas. 4; tom. 7, fas. 1, 2, 3.

From the SOCIETY.—Proceedings of the Society of Antiquaries of London, vol. 5, No. 4.

From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From Prof. STRUTHERS.—Skull of a Chinese individual; skull from Aberdeen.

From Rev. WALTER GREGOR.—Skull from a kist in Banffshire.

Two skulls, one being that of a Chinese individual, the gift of Professor Struthers, were exhibited.

A skull from a kist in Banffshire was also exhibited, by the Rev. Walter Gregor.

The Chairman exhibited, on behalf of Captain Edge, R.N., an idol from Nicobar.

The following paper was read by the author :

*The INHABITANTS of CAR NICOBAR.* By W. L. DISTANT, M.A.I.

THE following short account of some of the manners and customs of the inhabitants of Car Nicobar, is extracted from my journal kept during a visit to that island in the months of May and June 1868. A trip for the benefit of my health on board a trading brig from Penang, which remained at Car Nicobar for upwards of four weeks, afforded me some fair opportunities for observation. I had also the benefit of the captain's experience, the result of regular trading with this island for a series of some six or seven years.

Car Nicobar is the most northern of the Nicobar islands, and a description of its inhabitants will scarcely apply to the other islands of the group, which were little visited at the time of my journey, and whose inhabitants were reported to be of a more ferocious and less trustworthy character. The inhabitants of Car Nicobar are a tall and muscular race, larger in stature than the average Malay, and darker also in the colour of the skin; hair long and straight, worn generally to about the shoulders, except when mourning for the dead, when the head is closely shaven. The countenances of the men have usually good-humoured expressions, with dark, restless, observing eyes, always watchful, and quick to catch any characteristic or peculiarity. Their memories are particularly retentive, and they readily acquire a sufficient knowledge of the different languages spoken by the various traders who visit the island. Disease seems very rare among them. During the time I remained there, I only observed one case of paralysis, which had deprived a man of



the use of his right side, and a few cases of common ailments incidental to children. They make great use of the big toe as an opposable thumb, rarely bending to pick up any small thing with the hand from the ground.

The dress of the men is of the most primitive description; usually a string round the waist, supporting a narrow strip of cloth passed between the legs. But the chiefs, or head men, before strangers, adopt a more extensive apparel, according to the extent of their possessions in old clothes which they may have received in barter from the European traders. The regular London high-crowned hat is in particular demand, and a fortunate possessor of one of these may be seen strutting about with great self-complacency, though the remainder of his apparel may often consist of nothing but the string and cloth aforesaid. The hat is also found useful for carrying the different testimonials he may have received from the captains of other vessels. The dress of the women consists of a long piece of cloth, wound round the body, fastened at the breast, and extending below the knees. Trinkets ornament the nose; they perforate the lobe of the ear in a large and hideous manner (a custom also of the men), coils of brass or steel wire are worn above the ankle, or as bracelets for the wrist. Blue seems the favourite colour in the dress of the women; fancy colours, in which red predominates, are in greatest demand for the somewhat scanty attire of the men.

Their houses are in the form of a cone or bee-hive, supported on piles, so that the tallest man can walk underneath. The roof is neatly thatched; the sides are composed of bamboos, thickly and regularly laced together. Access is obtained by a bamboo ladder, which is usually pulled up at night. These houses are generally in groups of from ten to twelve in number, thus forming a succession of small villages (if they may be called so), and each has its head man, who seems to be invested with a certain amount of governing power.

At the invitation of a head man I paid a visit to one of these houses. Following my guide, and climbing the bamboo ladder, I entered a circular apartment, incidental to the structure of the dwelling. The floor was composed of laths of split bamboo, the apertures between which, allowed a delicious current of air to permeate the room. There was a fire made on a basket of sand, and a general air of cleanliness and neatness was most observable. As the guest, I was conducted to a very fair specimen of an arm-chair, evidently constructed from observations made of one of those articles on board some vessel. From the centre of the roof were suspended the wooden effigies of a man and woman in an arbour, obtained, I presume, from some vessel, which, my host dogmatically informed me, were the representations of the

first man and woman. I was pestered with inquiries of the outside world, particularly as to Queen Victoria ;—what sort of a house that august lady resided in, and as to how many sepoy's she had in her dominion. A woman was suckling an infant, whilst two small boys, apparently from ten to twelve years of age, were each nursing another baby. It seems a custom among these people, that so soon as a child is physically capable, its duty shall at once be considered to carry a smaller one about, and the number of these nurses with their charges that one meets with, is rather considerable. The children are not carried as in England, but astride the left hip, as is usual in the East. Most of these people seem to possess two habitations, one near the sea, the other some little distance inland.

Their religion, from outward protestation or observance, seems very little. They believe in a good and in an evil spirit. The latter they invest with a personality, and seem to fear the most. They believe he resides in the woody interior of the island, but consider he is only to be feared if they are dishonest, untruthful, take more than one wife, or injure their neighbours. I was informed by the captain with whom I was passenger, that at certain times each village is supposed to be visited by his Satanic majesty, and that at those times a general exodus of the inhabitants takes place. A large lizard is regarded with superstition, as, on my endeavouring to shoot one, I was told that I should bring disease and trouble upon myself if I succeeded. They are very honest. On the arrival of a trading vessel, they at once swarm on board, select the various articles they require, and take them away with them, stipulating to pay a certain number of cocoa-nuts, deliverable on the beach by a certain day (each man possessing a certain number of trees), which obligations are always faithfully fulfilled. Articles were actually bartered by the captain I was with, for cocoa-nuts to be delivered on his return in about three months' time. I was informed that murder, quarrelling and robbery, were quite unknown among them. They have but one wife, and look upon in chastity as a very deadly sin. In fact, though harmless and friendly, the slightest disrespect to their women would probably be visited by murderous consequences. The head men are in the habit of saving a certain amount of money to enable them to visit the nearer ports, such as Madras, Rangoon, Calcutta, etc., and during their stay in those places, their chastity has been closely scrutinised, on account of certain astonishment being felt for the same.

There is not much movement on the shore in the early morn, and I was informed that early rising is a thing almost unknown among them. Their principal occupation is gathering and con-

veying the cocoa-nuts they barter with the trading vessels. Work seems equally divided irrespective of sex. Men and boys climb the trees and cut down the nuts. As they fall the women gather them and tie them in pairs by tearing up strips of the bark and twisting two together. These are then slung across a bamboo, and more men, women and boys, carry them to the beach. They have a correct knowledge of numbers, the cocoa-nuts always being bargained for in hundreds, and the quantities are found strictly correct. They calculate their time by moons, and at one season of the year have a grand feast. I was informed by the captain, who had seen one of these bouts, that when the men are in a state of intoxication they fight with large pigs. The animals are made nearly mad, and the combat commences. A man waits for the rush of the pig, seizes it by the ears and throws it. That the men do not always escape, I proved by observing a large scar on the leg of one of these men, and on asking him the cause, he informed me it was the effect of one of these orgies.

Their canoes are fashioned out of one solid piece, but are not made on the island, being obtained from a neighbouring island of the group, and purchased with spoons and other commodities obtained from the trading vessels. Expeditions are also made from Car Nicobar to the other islands, and considerable loss of life by shipwreck frequently takes place.

The principal articles used by the traders in exchange for cocoa-nuts, are guns and ammunition, cutlasses, tobacco, cloth, rum, plated goods, etc. The cutlasses they use for cutting down the nuts, and the guns for shooting small birds. They do not hold the stock of the gun to the shoulder, but keep the weapon at arm's length. They are remarkably good shots. They use the rum to intoxication and as a change from the toddy they make from the fermented milk of the cocoa-nut. Plated goods, such as spoons and soup-ladles, they hang in their dwellings as ornaments.

They are fond of changing names with the visitors to the island, and some of their cognomens are rather extraordinary, not only the "Blue Book", but also the "Newgate Calendar", having seemingly been searched for names of distinction for them by facetious visitors. They are changeable in their requirements; a particular commodity that they bought freely and chiefly one time, would, the captain informed me, be scarcely looked at when he next arrived in three months' time.

Pigs and fish, which they usually take by spearing, form the staple of their food; yams are also plentiful, and are largely used. They seem to believe in the efficacy of snakes and beetles as cure for disease, for on my frequently offering rewards for

those objects, I would generally be asked, "What matter with you, Distant?" They have a peculiar method of treatment for illness. Coils of bright steel wire (brought by the Kling traders), are wound round the arms, fingers and toes. One unfortunate infant I observed with its limbs literally encased with this article. They have also acquired a slight acquaintance with modern medicine, such as quinine, Epsom salts, and castor oil; the latter being in considerable request. Scent is also purchased at almost any price, one man telling me it made him smell nice, and made his wife pleased with him.

The mad are put to death, being garotted with two pieces of bamboo; this, however, is seldom necessary, and is the only cause for a death penalty that I could discover.

There is a graveyard attached to each village, generally near the centre of the same. The dead are wrapped in cloths and buried, a post being placed at the head of the grave, with certain distinctive marks upon it. I was informed that after the space of some three years, the bones are publicly exhumed, taken out to sea, and scattered to the four winds. They seem to bear affectionate remembrance of their dead.

Though acutely observant, they seldom allow expressions of astonishment to escape them. This was particularly noticeable in two Nicobar youths we carried with us to Rangoon and Penang. In harbour they would jump overboard, and swim long distances to other vessels, on board which they would clamber, to the no small astonishment of the crews. They would make their way all over these strange vessels, even inspecting the cabin to satisfy their curiosity, exhibiting no fear, asking no permission, and to an extent ignoring the presence of the crews. At Penang, we once took them on an evening visit to some friends. A short time after our arrival, shrieks proclaimed the advent of one of our Nicobar friends in the sleeping apartment of a lady, where he had strayed in his inspection of the house. Search being made for the other, he was discovered alone and asleep on the drawing-room sofa. These people are peculiarly sensitive, and cannot be treated as servants or inferiors.

In conclusion, I can only say I have endeavoured to lay before the Institute such facts as came under my own observation, or could be gleaned from information at the island. I regret that I took no exact measurements as to height, etc., and was unable to procure any skulls.

#### DISCUSSION.

Mr. CONWAY begged to ask Mr. Distant, if the good and the evil powers worshipped were equally important, or whether the good was faintly thought of; and whether the worship seemed inspired by any other feeling than simple fear.

Mr. DISTANT, in reply to various questions, said their canoes are outriggered, and the fish-spear and paddle are not combined, each instrument being quite distinct from the other. Indolence is a very strongly marked characteristic of these people. Their habit of not holding the stock of the gun to the shoulder, but firing the weapon held at arm's length, must simply show a strength of wrist to counteract the force of the recoil. They never, however, attempt to shoot a bird on the wing. They seem to have only a slight idea of a Good Spirit, but to believe strongly in an evil spirit. Hence their religion (such little as it is) is one of fear. They usually carry a disc in the lobe of the ear.

Mr. CHARLESWORTH and Mr. PARK HARRISON also offered a few remarks.

The Director read the following paper :

*Some ACCOUNT of the WARS of EXTIRPATION, and HABITS of the NATIVE TRIBES of TASMANIA.* By J. E. CALDER, Esq., of Hobart Town.

THE most interesting event in the history of Tasmania, after its discovery, seems to be the extinction of its ancient inhabitants ; and as the causes that have led thereto have been only imperfectly told, I purpose throwing a little more light on the subject than has, as yet, been made public, which I derive from authentic official documents—not generally perused by writers on the colonies—that I have had the rare advantage of studying, and which contain, also, copious accounts of their wars on the whites, and some information about their habits.

It is believed that they were never a numerous people, and at no period since the colonisation of the country, in 1803, do they seem to have exceeded seven thousand—which may be safely taken as an outside estimate of their numbers. One individual of the race is now its only living representative, a very old woman, known amongst the colonists by the name of Lalla, but whose native name is Truganini.

The gradual decrease, leading to the final extinction of the ancient inhabitants of Tasmania which is now so very nearly accomplished, is assignable to very different causes than the hostility of the whites, to which it has been so much the fashion to ascribe it; for, up to the time of their voluntary surrender to the local Government, they not only maintained their ground everywhere (the towns excepted), but had by far the best of the fight. Tribal dissensions, causing mutual destruction (for such were their jealousies and hatreds, that they fought one another all the time they were thrashing the whites), contributed to their decrease in some degree, and the justly provoked hostility of



the settlers aided the progress of their decay, but only in a minor way; for, beyond all doubt, they were no match for the blacks in bush-fighting, either in defensive or offensive operations.

The settler and his homestead were generally, but not always, successfully surprised by his subtle enemy; and in pursuit (if the savage were beaten off), the less active European stood about the same chance of coming up with him, as the slow hound would have in a deer chase; and as far as I can learn from attentive perusal of the massive correspondence on the subject of the long quarrel between the two races, that is deposited in the office of the Colonial Secretary, filling seventeen large volumes of manuscript papers, aggressiveness was almost always on the side of the blacks; and in this unequal contest the musket of the Englishman was far less deadly than the spear of the savage, at least five of the former dying for one of the latter. Thus, in the first and largest volume of the series above spoken of, which treats solely of these encounters, we learn that in the five years preceding the close of 1831, ninety-nine inquests were held on such of the white people, whose bodies could be found after death, against nineteen blacks, killed in these farm fights; and it is further recorded, that in the same period sixty-nine Europeans were wounded against one, or at most two, of the other race; some of the latter were also taken. Of the natives who fell, only one was murdered. That many others on both sides, whose deaths are unreported, were killed in the same period, is very certain; and it is equally certain, or at least highly probable, that in these unrecorded encounters, our countrymen got the worst of it, as they generally did. The number of inquests actually held, must have been much greater than stated, as the coroners of three principal districts were unable to furnish the returns required by the Government, doubtless from the defective state of their office records, to say nothing of the operations of certain bands of whites, called "roving parties," one of which, at least, did kill several of them.

If it had been possible to bring the savage into fair and open fight, with something like equal numbers, all this would have been reversed, of course. But the black assailant was far too acute and crafty an enemy to be betrayed into this style of contest, and never fought till he knew he had his opponents at a disadvantage to themselves. He waited and watched for his opportunity for hours, and often for days, for he knew nothing of the value of time, and when the proper moment arrived, he attacked the solitary hut of the stock-keeper, or the hapless traveller whom he met in the bush, with irresistible numbers,

taking life generally singly, but often; the largest number that I read of his destroying on any one occasion being four persons.

In these assaults on the dwellings of his enemy he contrived his attacks so cleverly as to insure success at least five times in six, and if forced to abandon his enterprise, his retreat, with few exceptions, was a bloodless one.

The natives so managed their advance on the point of attack as not to be seen until they were almost close to the dwelling of their victim. They distinguished between a house and a hut, and seldom approached the former, for they quite understood that there was some difference between the most imprudent stock-keeper, and his more thoughtful employer. They had several instances of this, and profited by their experience. There was no want of pluck in the former, but a great absence of vigilance; and until these barbarians were reduced to a mere remnant by disease and strife, they never attacked except in parties of twenty, fifty, a hundred, or even greater numbers.

Their mode of assaulting a dwelling when there were several inmates at home, which they knew by previous watching, was to divide into small gangs of five, ten, or more, each concealing itself as effectually as the clansmen of Roderick Dhu, their approach being so quiet as to create no suspicion of their presence, to which the woody and uneven nature of the country is eminently favourable. Then one of these parties, which was prepared for instant retreat, made its presence known, either by setting fire to some shed or brush fence, or by sending a flight of spears in at the window, shouting their well-known war-whoop at the same time. This never failed of bringing out the occupants, who, seeing the authors of the outrage, now at a safe distance, but in an attitude of defiance, incautiously pursued them; and no experience of the artifices of the savage ever taught the assailed a lesson not to continue this insane practice. The blacks then retreated just as quickly as the others advanced, keeping out of gunshot, and defying them, generally in good English, to come on; for it was always found that some of nearly every tribe spoke our language well, as will be presently explained. Having decoyed their pursuers to a safe distance into the woods, and generally with rising ground between them and the hut, the others sprang from their cover, and rushing into the place, plundered it of its contents, often finishing their work by burning it to its foundations; first, however, killing, or leaving for dead, any unfortunate persons—mostly a mother and her children—who chanced to be left behind. They then fled with their booty, reuniting with the decoy party at some distant point.

In their first systematised assaults, which seem to have commenced about 1824, or a little earlier, their principal object was murder; but in later times, plunder was the chief motive of the savage in attacking the white; and murder, which was often superadded, was only a secondary idea. They took everything that was useful, and often what was of no use at all to them; and more than once afterwards when their encampments were surprised, perhaps fifty miles from any settlement, when instant flight was necessary, they left articles behind that they could not even have known the nature of, such, for example, as clocks, work-boxes, etc., of which there are still extant some curious inventories.

But provisions of all sorts, and, above all, blankets, firearms and ammunition, were the articles they prized most; of which latter they eventually surrendered many stand to the Government—pistols, muskets, fowling-pieces, powder and ball, all perfectly clean and dry, and in excellent order. Of these latter it was found that they knew not only the use, but were also practised in using them; but there is no instance of their bringing them into the field, though they afterwards assured their principal captor and future "protector," Mr. George Augustus Robinson, that they meant to have done so, but to the last they seem to have preferred their own arms in both fight and chase—namely, the spear and waddy.

Of firearms they had learned the use from both men and women of their own race, who, having been taken in early infancy by the settlers, were brought up in their own families, mostly as their own children; but they invariably left them when they grew up, and rejoined their own people just like wood-pigeons, whose natural instincts can never be repressed. To these flights the youths were generally induced by the girls of their own race, with whom alone they could intermarry, and who had, therefore, no difficulty in enticing them into the woods. The natural propensity of the domesticated black females to be with their own people, operated similarly on them, and they became the instructors, in mischief at least, of the wild natives, and strangely enough, were foremost in every aggression on the whites, by whom, with hardly an exception, they had been treated with unvarying kindness; but they were probably thrust to the front by the others; and, possessed, as the whole race was, of most excellent memories, they never lost the language of our country.

Women, too, who had been either forcibly removed from their tribes, or purchased of their husbands or fathers, by a lawless handful of ruffians called sealers, sometimes escaped from their merciless masters, and after years of separation, rejoined their

tribes, and became the most hostile of the enemies of all who belonged to the race of their persecutors; and notwithstanding the ancient custom of the blacks, not to permit the women to take any part in active war, these individuals could not be restrained from joining in, and sometimes leading the attack. One of these persons, called the amazon by her captor Robinson, a woman of one of the East Coast tribes whose real name was Walyer or Taierenore, planned and executed nearly every outrage that was committed in the districts bordering on the north and north-western coast. In the days of their decay, she collected the poor remnants of several tribes into one hostile band, of whom she was the leader and chieftainess; and true to the natural instincts of the savage, avenged the many indignities she had suffered at the hands of a sealer, on every one she fell in with who bore his complexion, telling Robinson she would kill the whole race "as soon as she would crush a black snake."

The craft of the savage, and his uniform disposition to treachery in his early intercourse with the settlers, are very faithfully described in the report of the Aboriginal Committee, 19th March, 1830. This committee consisted of some of the best informed and most intelligent men of the colonies of New South Wales and Tasmania, of whom Archdeacon Broughton, the immediate superior of the church of both colonies, was chairman. From this report I will here make an extract:—

"It is manifestly shown that an intercourse with them on the part of insulated and unprotected individuals or families has never been perfectly secure. Although they might receive with apparent favour and confidence such persons as landed from time to time on various parts of the coast, or fell in with them in remote situations, yet no sooner was the store of presents exhausted, or the interview from other causes concluded, than there was a risk of the natives making an attack upon the very persons from whom they had the instant before been receiving kindness, and against whom they had, up to that moment, suffered no indication of hostility to betray itself. . . . It is within the knowledge of many members of the committee, and has been confirmed by other statements, that even at this period (they are speaking of the early times of the colony) there was, beyond all doubt, in the disposition of the aborigines a lurking spirit of cruelty and mischievous craft, as upon very many occasions, and even on their retirement from houses, where they had been kindly received and entertained, they have been known to put to death with the utmost wantonness and inhumanity stock and hut keepers whom they fell in with in retired stations, at a distance from population, and who there is every reason to believe had never given them the slightest provocation."



To put down such an enemy as the aboriginal of Tasmania, who, I have shown, was neither to be easily met with in fight, nor overtaken in pursuit, in both of which he so often proved himself the superior man, was obviously a most difficult task; and either his never-ceasing surprises of the settlers must be quietly borne with, or his race must be removed. For a long time the Government retaliated with idle proclamations only, published in the official *Gazette* with as much seriousness as if it really believed this captivating journal reached the hands of these barbarians, which were of course only so many contributions to the waste-paper basket of the colony. One of these silly advertisements defined the limits of the districts they were to live in, and directed them in mandatory terms never more to pass the lines described in this terrible order, which could not be conveyed to them, nor understood if it were. Abandoning at last this absurd mode of procedure, which lasted much too long, while the blacks were devastating the homes of the colonists, almost with impunity, Colonel Arthur took more active measures for the protection of the people, and equipped several "roving parties", as they were called, to beat up the natives' encampments, and if possible to convey to the enemy a message of peace: and as these parties were mostly accompanied by captive blacks, half tamed into subordination, partial intercourse with some of the tribes took place, and beyond doubt, it somehow became known to them that the wish of the Governor was to protect equally both races, for when Robinson afterwards got a footing amongst them, he not only found that they were well aware that the desire of the whites was for peace, but that the expiring tribes, who were then dying off almost as fast as they could lie down, were not unwilling to "come in," as he calls it, *i.e.*, to surrender. The dissemination of this desire, in whatever way it reached them, was the principal good done by the roving parties—that is, if it were effected by them, as it is said to have been; though considering what was the practical action of some of them, I should think they did more to increase than allay enmity, and it is more likely they heard it from the civilised youth of their own race, who so often eloped from the guardianship of the settler. But the tribes still remained as intractable as ever, until a man who spoke their own language, and was master of their various dialects (of which Robinson says there were six), went boldly amongst them, accompanied by ten or a dozen of their own countrymen, whom he had perfectly subdued to his will, and conciliated into affection for his person, and in about five years of most unremitting exertion and toil, brought in the whole of them (except about four) who, to the great astonishment of everyone but himself, were found not to number



more than two hundred and fifty. The causes of this declension I shall explain in their proper place, taking Robinson for my authority. In his various reports he always maintained that this people was nothing but a remnant of the six or eight thousands who were living in 1804, and his reports of their strength he had from the most accurate sources, viz., the natives themselves (who though they had no words to express numbers higher than units, could repeat the names of the individuals of the tribes), and thus he learned their real force, which he never rated higher than seven hundred—that is, after 1830; and year after year his estimates decreased as they died out, and he then reports five hundred, and finally three hundred or four hundred, and when he got the last of them they had sunk to the numbers given above, that is, to about two hundred and fifty.

Without going into the general subject of the decay of this race in this place, I may venture a passing remark or two on the subject of their rapid and remarkable declension, which had been going on for some years before this time, as if the very plague had seized on them. Whole tribes (some of which Robinson mentions by name as being in existence fifteen or twenty years before he went amongst them, and which had probably never had a shot fired at them) had absolutely and entirely vanished. To the causes to which he attributes this strange wasting away, as coming under his own personal observation, I think infecundity, produced by the infidelity of the women to their husbands in the early times of the colony, may be safely added. This, I believe, was not a mere occasional, but very general failing amongst the women; and prostitution, all the world over, vitiates the powers of the females, wholly obstructing production. Robinson always enumerates the sexes of the individuals he took, and distinguishes between childhood, adolescence, and manhood; and, as a general thing, found scarcely any children amongst them, and quite reversely of the natural condition of our race, the adulthood was found to outweigh infancy everywhere in a remarkable degree. In the present instance his capture was found to consist of sixteen men, nine women and one child.

The well-known doctrine of Strezelecki that the savage woman, after contamination by the white, is invariably and for ever infertile, is only an amusing fiction, instances of the contrary having occurred, both in New South Wales and Tasmania, in cases where I presume the cohabitation was not a very protracted one. Nor can the decadence I have spoken of be traced to infanticide, at any rate of children of their own blood, of whom the mother was passionately fond; though it seems possible that the peculiar exigencies of their state may have sometimes produced a forced, but certainly most unwilling, abandonment

of them. Instances of infanticide did, indeed, come within Robinson's knowledge; but then the victims were half-castes, whom the savage woman both of Australia and Tasmania is known generally to have hated. In the cases in question a mother suffocated two of her offspring by thrusting grass into their mouths till they died. (Report, 13th May, 1831.) In concluding his account of this cruel tragedy, he says:—"The aboriginal females in the Straits do not entertain an equal degree of fondness for those children whom they have derived from Europeans. In confirmation of which several facts are on record." And he adds, in reference to these murders, "this circumstance is borne out by the united testimony of the aboriginal women of the establishment" (Swan Island).

Their rapid declension after the colony was founded is traceable, as far as our proofs allow us to judge, to the prevalence of epidemic disorders; which, though not introduced by the Europeans, were possibly accidentally increased by them. The naked savage soon discovered the comforts of covering, and such things as blankets and clothing were often given them by the settlers, or were distributed amongst them by the Government in large quantities; and in their almost countless hut robberies they never failed of taking away every blanket they found there.

But of all created animals, the untaught savage is the most imprudent; and he often kept his prize no longer than it suited the idle habits of the wanderer to carry it. Hence, he was wrapped up like a mummy one week, and was as naked as a newly-born infant the next. The climate of Tasmania is also a variable one. True, there is hardly such a thing known as extreme heat or cold, but there are very rapid changes of temperature, from moderate heat to coolness. Cold, in the Englishman's sense of the word, is unknown, except in the high lands of the country, where for five months of the year it is bitter enough, and something like a seventh or eighth of its area is over two thousand feet high; and no little part of these high-lying lands is double that elevation, and a good deal more, and therefore both chilly and humid. The surface is quite as varying as the climate, hence the general beauty of its scenery. Now any person, whether savage or civilised, who wraps up at one time and goes perfectly naked at another, exposed to very frequent changes of temperature, is certainly not likely to keep long in health, but is assuredly laying the foundation of fatal consumptive complaints, from which (such was the peculiar constitution of the Tasmanian savage) almost immediate death was certain, and whenever he took cold it seems to have settled on his lungs from the first. Speaking of the many deaths occurring amongst this people from this cause, Robinson says

"they are universally susceptible of cold, and unless the utmost providence is taken to check its progress at an early period, it fixes itself on the lungs, and gradually assumes the complaint spoken of, *i.e.*, Catarrhal Fever." (Report, May 24, 1831). Again, speaking of the tribes inhabiting the Western districts, he says, "The number of aboriginals along the Western Coast has been considerably reduced since the time of my first visit," that is, at the beginning of 1830; "a mortality has raged amongst them, which, together with the severity of the season and other causes, has rendered their numbers very inconsiderable." (July 29, 1832.) I am little versed in the science that treats of epidemic disease, and cannot therefore explain the processes by which they are spread through entire communities with something like telegraphic rapidity, but it is visible to us all, and therefore requires no verbal proof; and the savage of Tasmania was more than ordinarily liable to its attacks, which, unlike the European, he knew no remedy for, and sought only to relieve his pain by a process far more likely to be injurious than beneficial, namely, the excessive laceration of his body with flint, or glass if he could get it, which, by producing weakness, made death only the more speedy and certain. He had none of the appliances or comforts of civilised life, and succumbed at once. Colds, settling almost instantly on the lungs, sent them to the grave by hundreds; and no wonder that Robinson found a whole tribe housed in a single hut, for whom a twelvemonth before six or seven were necessary; and I quite believe that the original cause of their decay lay in their own imprudence, generating fatal catarrhal complaints, from which a European, by proper remedial measures, resorted to early, would easily have recovered. These imprudences were, of course, practised only by a few tribes inhabiting the settled districts, but the consequences, which are of course epidemic, infected all before long.

Many of the tribes, particularly of the Western and South Western Coast districts, which were known to be very strong in numbers, long after the first colonisation of the country, were not exposed to contact with the whites, and yet when taken, they hardly ever consisted of twenty persons, and when larger numbers were brought in at any one time they were always of more than one family.

Of their rapid mortality when under the immediate observation of the protector at Bruny, Flinders, and Hunter's Islands, I have said enough already. But it may not be improper to add that at the last-named asylum, sickness was sometimes induced by the neglect of the Government, which persisted for some months in supplying them with salt provisions (in spite of the repeated and strenuous remonstrances of Robinson), which they

hated the very name of, and only ate from necessity, but to which they were too long restricted. The little game there was left on the island, after the incursions of the sealers were prohibited, was speedily demolished by the natives. Of shell-fish, there were few or none hereabouts, and no other fish would any native of Tasmania ever touch; whether it was natural aversion or superstition is not known, but scale-fish of any kind was as much an abomination to the entire race as swine's-flesh to the Jew or Mussulman: and they would literally rather starve than eat it. In this respect they quite differed from the New Holland savages, by whom it is greatly relished. From some not very satisfactorily explained cause, the sheep on the island were not touched. Robinson says they were too young and too small for killing; but the consequence of restricting the natives to salt provisions was to bring on scorbutic complaints, which terminated fatally in some instances.

Treatment of the Dead.—In one of the protector's earliest reports, 12th June, 1829, he gives some lengthy, but very interesting, particulars of their mode of disposing of the bodies of their dead. He relates nothing but what he saw himself, of the death of the patient or patients, and final disposal of the corpse. As nothing can be more simple or touching than his account of the subject, I shall quote all he says about them. The scenes he describes took place on Bruny Island in 1829:—

“Extracts from my journal.—Monday, May 18, 8 a.m.—Visited the aboriginal family, Joe, Mary, and two children. Mary evidently much worse, appeared in a dying state. Looked wistfully at me, as if anxious for me to afford her relief. Alas! I know not how to relieve her. Only the Lord can relieve in such trying circumstances. Inquired of her husband the cause of her affliction; he said ‘Merriday, byday, ligdinny, loammerday’ (sick, head, breast, belly.) On each of those parts incisions had been made with a piece of glass bottle. The forehead was much lacerated, the blood streaming down her face. Her whole frame was wasted. She had a ghastly appearance; she seemed in dreadful agony; her husband, much affected, frequently shed tears. . . . Made her some tea; could not bear the afflicting scene; returned to my quarters; the husband soon following me, his cheeks wet with tears, said his ‘luberer, lowgerner un uenee’ (wife, sleep by the fire). Stopped about half an hour. I made him some tea for his children. Asked him if he would take his luberer any. He said ‘tea-noailly, parmatter, panmerlia linener, no-ailly’ (tea no good, potatoes, bread, water no good), meaning his wife had no wish for food of any kind. In about half an hour I met him coming towards my quarters with his two children, kangaroo skins, etc. At about a hundred yards distant I saw a large fire.



It immediately occurred to me that his wife was dead, and that the fire I then saw was her funeral pile. I asked him where his luberer was. He said 'loggeenee-uenee' (dead—in the fire). Walked to the place; the wind had wafted the fire from her body; her legs were quite exposed (here follow a few illegible words); the fire had burnt out; the body was placed in a sitting posture. While ruminating on the dire mortality that had taken place amongst the people of this tribe, I was interrupted in my reverie by the husband of the deceased, who requested I would assist him in gathering who-ee (wood) for the purpose of consuming the remains of the body. My feelings were considerably excited at this—an office of all others I never could have conceived I should have been called on to assist in."

Poor Joe's own turn came in less than a fortnight, and Robinson's journal thus describes his death, and gives this time a fuller detail of the funeral ceremonies of a native.

"Sunday, May 31, 5 p.m.—The sick aboriginal requested to have a fire made outside of the hut, to which he desired to be carried. Imagining that this man could not survive long without immediate medical relief, I ordered the boat to be got ready, intending to send him to town. But God's will be done. He expired ere it was ready. These are afflictive providences. In the death of this man and his last wife Mary, the establishment has sustained a great loss. He was kind, humane, and remarkably affectionate to his children.\* . . . . Last Sabbath he appeared in good health, but his spirits were evidently broken since the death of his last wife. He has left two helpless orphans to lament his loss. I took occasion to converse with the natives on account of the death of his two wives, but they told me they did not like to speak of it." (It is right to say that they never spoke of the dead, nor ever again mentioned their names.)

"Manner of Burning the Dead.—I was busy preparing for his departure to Hobart Town for medical assistance, when the groans of this man ceased, and with them the noise of the other natives. A solemn stillness prevailed—my apprehensions became excited—I went out—he had just expired. The other natives were sitting round, and some were employed in gathering grass. They then bent the legs back against the thigh, and bound them round with twisted grass. Each arm was bent together, and bound round above the elbow. The funeral pile was made by placing some dry wood at the bottom, on which they laid some dry bark, then placed more dry wood, raising it about two feet six inches above the ground; a quantity of dry bark was then laid upon the logs, upon which they laid the corpse,

\* Another of these Bruny islanders named Woureddy, had the same good qualities, but they were rare amongst the men, who were very tyrannical.



arching the whole over with dry wood, men and women assisting in kindling the fire, after which they went away, and did not approach the spot any more that day. The next morning I went with them to see the remains, and found a dog eating part of the body. The remains were then collected and burnt.

"I wished them to have burnt the body on the same spot where his wife had been burnt, but whether because it was too much trouble, or from superstitious motives, I know not, but they did not seem at all willing; I therefore did not urge it. . . . . After the fire had burnt out, the ashes were scraped together, and covered over with grass and dead sticks."

While the natives were making the funeral pile, Robinson took occasion to extract from them what their ideas were of a future state, and where they thought the departed went to. They all answered "Dreeny," that is to England, saying "Parleevar loggernu uencee toggerer Teeny Dreeny, mobberly Parleevar Dreeny" (native dead, fire; goes road England, plenty natives England). From what they had seen of the productions of the superior race, they probably thought there was no happier abode in the universe than England.

He tried to convince them that England was not the home of the departed, and though, like some other orators, he talked them down, he did not argue them out of their belief.

It has been often said that they had no idea that there was such a thing as a future state; but this simple reply shows that, however imperfect their notions were on this subject, they quite believed in a life beyond the grave, or rather after the destruction of the body at the funeral pile. He adds that they were fatalists, and also that they believed in the existence of both a good and evil spirit. The latter, he says, they called Raegoo wrapper, to whom they attributed all their afflictions. They used the same word to express thunder and lightning. He also says that the dying native had a keen perception of his approaching end, and when he knew it was at hand his last desire was to be removed into the open air to die by his fire.

In the same report, he says, they always retired to rest at dusk, rising again at midnight, and passing the remainder of the night in singing, to his own very particular discomfort, as there was no more sleep for him after they woke up. "My rest," he says, "has been considerably broken" (by this disagreeable practice of theirs of night-singing), "in which they all join. This is kept up till daylight; added to this, is the squalling of their children," and here he ends the sentence.

In a subsequent report, August 6, 1831, written after he became acquainted with the hostile tribes, he says that the most popular of their songs were those in which they recounted their attacks on and their fights with the whites.

It has been customary to rank the Tasmanian savages with the most degraded of the human family, and as possessed of inferior intelligence only. But facts quite disprove this idea, and show that they were naturally very intellectual, highly susceptible of culture, and above all, most desirous of receiving instruction, which is fatal to the dogma of their incapacity for civilisation. Reasoning from such facts as that they went perfectly naked, were unacquainted with the simplest arts, were even ignorant of any method of procuring fire, and erroneously thought to have no idea of a Supreme Being or future condition, they were almost held to be the link that connected man with the brutes of the field and forest.

The aboriginal's wants were, indeed, so few, and the country in which it had pleased the Almighty to place him supplied them all in such lavish abundance, that he was not called on for the exercise of much skill or labour in satisfying his requirements. He had no inducement to work, and (like all others who are so situated) he did not very greatly exert himself. Necessity, said to be the parent of invention, was known to him only in a limited degree; and his ingenuity was seldom brought into exercise. His faculties were dormant from the mere bounty of providence. The game of the country and its vegetable productions would have amply supported a native population ten or a dozen times larger than it ever was. Kangaroos, opossums, wombats, birds, shell-fish were plentiful, far in excess of his wants. Of fruits, there are, indeed, none worthy the name. But in the vast forests of the country are to be found very many vegetables which, though quite disregarded by Europeans, were relished by the savage; and Robinson, in one of his letters, speaks of his resorting to their practice of using certain edible ferns, which are so abundant in many districts that credulity could hardly believe it.

His country, lying a little north of a line, mid-distant from the pole and equator, the climate of its low-lying lands is necessarily mild and very agreeable, so that bodily covering of any kind, though prized after habituation to it, was easily dispensed with, and the skin of the kangaroo, so fastened over one shoulder as not to impede the free use of the arms, was enough for the female and her infant, the adult male going generally quite naked. That he was ignorant of any artificial means of procuring fire may be traced to the nature of the woods of his country, which, with hardly an exception, are nearly as hard as whin-stone, and not very inflammable either, so that no amount of manual friction could possibly ignite them. Hence his fire, however he first obtained it, like that of Vesta, was never suffered to die out, it being the province of the women to keep it con-

stantly supplied with fuel when the tribe was stationary, and to preserve it when on the move, by bark torches renewed as required.

In stature, some of them were tall, and a few were robust; but the most of them were slimly built persons, wiry and very agile. The features of neither sex were prepossessing, especially after they had passed middle age. Their noses were broad, and their mouths generally protruded extremely. In youth, some of the women were passably good-looking, but not so the most of them; and only one of the many I have seen—the wife of a chief—was handsome. The women, however, appeared to great disadvantage, by their fashion of shaving the head quite closely, which in their wild state was done with flints and shells, and afterwards with glass, when they could get it. The men, on the contrary, allowed their hair to grow very long, and plastered it all over very thickly with a composition of red ochre and grease, and when it dried a little their locks hung down so as to resemble a bundle of painted ropes, the red powder from which falling over their bodies (which were naturally a dull black colour), gave the naked savage a most repulsive look.

The shoulders and breasts were marked by lines of short, raised scars, caused by cutting through the skin and rubbing in charcoal. These cuts somewhat resemble the marks made by a cupping instrument, but were much larger and further apart.

They never permitted their wives or children to accompany them in their war expeditions, either against the whites or enemies of their own race, but left them in places of security and concealment; and Robinson told me that, though their wives went with them in their hunting excursions, they did not allow them to participate in the sport, and that they acted only as drudges to carry their spears and the game; but that the fishing (for shell-fish only, obtained by diving) was resigned wholly to them. The men, he said, considered it beneath them, and left it and all other troublesome services to them, who, in nine cases out of ten, were no better than slaves. If a storm came on unexpectedly, the men would sit down while the women built huts over them, in which operation, as in all others of a menial nature, the man took no part. To make his own spears, to hunt, fight, and salve himself with his ochreous mixture, were his principal, and perhaps only, occupations.

The huts of this people were the frailest and most temporary structures conceivable. They were often meant only for a night, and perhaps were seldom occupied for a week, though those of some of the west coast tribes were more substantial. Uniformity of design was, of course, quite out of the question; for these hovels were suited to the circumstances of the moment only.

Some that I once met with in the Western Mountains seemed to have been constructed in a great hurry, and were composed of a few strips of bark laid against some large dead branches that were used just as they had fallen from the trees above. Others that I have seen had evidently been occupied for several nights. These were also of bark, supported on sticks driven a little into the ground, and were adorned, according to their ideas of ornament, with several rude charcoal drawings, one representing a kangaroo of unnatural appearance, that is, with its forelegs about twice as long as the hinder ones; another was meant for an emu; a third was also an animal that might have been either a dog, a horse, or a crocodile, according to the fancy of the connoisseur. But the *chef-d'œuvre* was a battle-piece, a native fight—men dying and flying all over it. These huts were closed only on the weather side, and perfectly open in front, some large enough for several persons, others less; and the one with the elaborate designs was, I suppose, the residence of a single gentleman, being the least of all.

His spear was a long thin stick pointed at both ends, made of a hard heavy wood, called by the colonists tea-tree. The weapon of the adult was ten feet long or more, and was thrown from the hand only, with great force and precision, having a range of, I believe, about sixty or seventy yards. Both the throwing-stick and shield of the New Hollander were unknown to him.

The only other weapon he used was the waddie. This was made of the same wood as the spear; not two feet long, and thicker at one end than the other. It was held by the thinner end, and was used either as a club or missile. Used for the latter purpose, it was hurled with awful force and certain aim. When his other weapons failed him he fought with stones, and even with these was a very formidable opponent. The waddie, however, was chiefly used in the chase.

In fight, the vengeance of the savage was not appeased by the death of an enemy. The mutilation of the body, and particularly of the head, always followed, unless the victor was surprised or apprehended surprise. This was done either by dashing heavy stones at the corpse, or beating it savagely with the waddie. In many of the inquests that I have spoken of in the early part of this paper the deceased were hardly recognisable.

The Tasmanian aboriginal, in advancing on an unsuspecting victim whom he meant to kill treacherously, approached apparently quite unarmed, with his hands clasped and resting on the top of his head, a favourite posture of the black, and with no appearance of a hostile intention. But all the time he was dragging a spear behind him, held between his toes, in a manner that must have taken long to acquire. Then by a motion as



unexpected as it was rapid, it was transferred to the hand, and the victim pierced before he could lift a hand or stir a step. This practice and some others of theirs, are, I believe, common in New Holland, and seem to favour the idea of original migration from thence. But they were not of the same stock. There was one very marked difference between the races, the Australian being a straight-haired man, and the Tasmanian wool-headed.

The hatred of the women for their half-caste offspring has been named before, and I have been told that the New Holland woman has the same aversion. My informant was a gentleman who had resided long in the wilds of Australia, and said that though children of mixed blood were to be met at the encampments of the blacks, he never saw an adult half-caste amongst them, and he believed they destroyed them. There are about a hundred of them now living in the Straits, the results of union between the sealer and savage, many of whom have even reached old age. But here the parents lived together in settled life, and the fathers, bad as they are said to have been, were there to protect their children. No doubt the characters of these men have been taken from the worst and most hardened of them. But in Australia I have heard that the union from which these unfortunates are produced is of the most temporary nature, and usually dissolved after a brief intimacy, the care of the offspring of it being wholly surrendered to the mother, in whose charge it seems never to reach even adolescence.

It is nowhere stated, that I know of, that polygamy was practised by the Tasmanian; but as the man Joe, whose death and funeral ceremonies I have recorded, had two wives at the same time, it cannot be said that the practice was unknown to them.

To the other services rendered by the woman, must be added the entire care of the children. She carried her infant, not in her arms, but astride her shoulders, holding its hands.

The construction and propulsion of the catamaran, or boat of the native, was also the work of the women. This "machine," as Robinson contemptuously calls it, was only used by the people of the south and west coasts. The northern and east coast tribes, he says, "have not the slightest knowledge of this machine" (Report, February 24th, 1831). The configuration of the north and east coasts—which are not much indented with bays, made it hardly necessary to the people inhabiting them. It was of considerable size, and something like a whale-boat, that is, sharp-sterned, but a solid structure, and the natives in their aquatic adventures sat on the top. It was generally made of the buoyant and soft velvety bark of the swamp tea-tree (*Melaleuca Sp.*), and consisted of a multitude of small strips bound together. The



mode of its propulsion would shock the professional or amateur waterman. Common sticks with points instead of blades were all that were used to urge it with its living freight through the water, and yet I am assured that its progress was not so very slow. My informant, Alexander McKay, told me they were good weather judges, and only used this vessel when well assured there would be little wind and no danger, for an upset would have been risky to some of the men, who, unlike the women, were not always good swimmers, though most of them were perfect. In crossing from South Bruny to Port Esperance, which they sometimes did, the distance is not less than eight or ten miles, and in stormy weather this is no pleasant adventure, even in a first-class boat.

They were great flesh-eaters, but not cannibals, and never were; and some of them, being incautiously asked if they ever indulged in this practice, expressed great horror at it. They never named the dead, and certainly never ate them. Large and small game was supplied them so plentifully, that they had no occasion to resort to this revolting custom.

Their mode of ascending trees after opossums was to cut small notches in the barrel, just large enough to admit the toes. These were cut with a sharp stone. The labour of making these stepping places with these simple instruments was such as to cause them to cut them at long intervals, which induced the discoverer of the country, Tasman, to believe they must be of gigantic stature, which I need hardly say they were not.

Their condition in a land of plenty rendered an acquaintance with arts of any kind nearly unnecessary. The fabrication of their simple arms, of baskets, canoes, string, and necklaces, I believe, exhausts the list of their manufactures.

Their baskets were made of the long leaves of the plant called cutting-grass, very neatly woven together; and the necklaces of small, beautiful shells, iridescent, the purple tint predominating. These shells in their natural state have no great beauty, but after removing their outer coating, their appearance is quite altered. This removal they effected with acids, how obtained in their wild state I know not, but I presume from wood. In their captivity at Oyster Cove, where they made them for sale, they used vinegar. I think a moderate heat was necessary in removing this outer covering, for, on visiting their huts when they were preparing them, a woman handed me a saucer of them, which she took from the fireplace.

A curious account of one of their places of meeting is preserved in an official letter, written by Mr. W. B. Walker, dated December 24th, 1827, from which the following is taken:—

“Some time since Mr. W. Field had occasion to search for a

fresh run for some of his cattle, in the course of which he found a fine tract of land to the west of George Town, in which is an extensive plain, and on one side of it his stock-keepers found a kind of spire, curiously ornamented with shells, grasswork, etc. The tree of which it is formed appeared to have had much labour and ingenuity bestowed upon it, being by means of fire brought to a sharp point at top and pierced with holes in which pieces of wood are placed in such a manner as to afford an easy ascent to near the top, where there is a commodious seat for a man. At the distance of fifteen or twenty yards round the tree are two circular ranges of good huts, composed of bark and grass, described as much in the form of an old-fashioned coal-scuttle turned wrong side up, the entrance about eighteen inches high, five feet or six feet high at the back, and eight feet or ten feet long. There are also numerous small places in form of birds'-nests, formed of grass, having constantly fourteen stones in each. The circular space between the spire and the huts has the appearance of being much frequented, being trod quite bare of grass, and seems to be used as a place of assembly and consultation. In the huts and the vicinity were found an immense number of waddies, but very few spears. The stock-keepers, several of whom have given me the same account, call them preaching places, and state there are two others, but of inferior construction, one about five miles from the Supply Mills, and the other west of Piper's Lagoon, north of the Western River (now the Meander). One of my informants, who has been much in the habit of kangaroo hunting, says they are places of rendezvous, where the natives keep a large stock of spears and waddies. He described the spears as carefully tied to straight trees with their points at some distance from the ground. He states that he has frequently met small parties of natives on their way to and from the two last-named places, and that the parties that ramble about this part come from thence."

Animosities ran high amongst them, and their quarrels never died out except with the extinction of their enemies. They made long marches to surprise them; and to come on them unperceived, if possible, was their constant object. But it was most difficult to approach them thus, the greatest circumspection being necessary, for such was their vigilance, that it was rare to catch them off their guard; and this difficulty must have been much increased when they became possessed of dogs, of which every tribe had an immense pack, varying from thirty to one hundred. In a country less abounding in game than Tasmania, such numbers could not have been kept. There seems to have been an hereditary feud between the men of the east and the west, and whenever their captor, Robinson, met them they were

either on the march to meet their ancient opponents, or were returning from a victory; for I do not recollect a single instance in which they ever acknowledged defeat.

Their march was described to me as a very regular one, and that they stepped pretty well together, singing or shouting some war chant, and rattling their spears as they went along, striking the ground with great force with the foot every third or fourth step. The look of each was determined and ferocious beyond expression.

Capacity for Civilisation.—Of their mental faculties and aptitude for acquiring knowledge, he speaks in laudatory terms. In a lengthy report, dated July, 1836, he gives a great deal of valuable information on these interesting subjects, which dispels the long-received notion that they were incapable of civilisation; and, as this intelligence relating to an extinct race can hardly fail of gratifying laudable curiosity, I shall repeat a good deal of what he says, running the extracts I make into a continuous narrative:—

“The minds of the aborigines,” he says, “are beginning to expand. They have more enlarged views of their present situation, and are grateful for the favours conferred upon them. They are volatile in their spirits, and are extremely facetious and perfectly under command. They studiously avoid exciting my displeasure, and appear grieved if they imagine I am in the least offended. The natives are placed under no kind of restraint, but every degree of personal freedom consistent with a due regard to their health, and the formation of religious and civilised habits. The natives are now perfectly docile, and the greatest tranquillity exists among them. The mortality that has taken place among the aborigines on the islands may be attributed to a variety of causes, but the following appear to be the chief—the exposed and damp situations of their dwellings, and the frail manner of their construction; their want of clothing, the saline property of the water, and the continued use of salt provisions. The catarrhal and pneumonic attacks to which they are so subject, and which are the only fatal diseases among them, are caused by the injudicious system of changing their food and manner of life.

“The natives are instructed in the principles of the Christian religion. Public worship is celebrated twice on the Sabbath. The service is commenced by singing, and reading from the Scriptures select portions, etc. A short prayer, a few cursory remarks from Scripture are then delivered, when the service is concluded by singing and prayer. The native youth, Walter, acts on these occasions as clerk, giving out the hymns, and reading the responses. The rest of the service is conducted by the catechist.

"Catechetical instruction is the best suited to the capacities of the natives; for which purpose the catechist was a short time since to commence a course of this instruction on Tuesday evenings, and which is the only weekly religious instruction afforded the natives.

"In reference to the foregoing subjects, I am proud to state that the most astonishing and marked improvement has taken place among the aborigines. In the attendance at divine worship the people are left, in a great degree, to their own choice, and which, in matters of religion, I think they ought. But, as example teaches before precept, I am a constant and regular attendant. Their conduct during divine worship is of the most exemplary kind. They are quiet and attentive to what is said, and the church is crowded. The ignorance of the natives heretofore in the first principles of religion was more the fault of the system than of the people, for I am fully persuaded they are capable of high mental improvement.

"Sacred Melody.—This had always appeared to me a delightful part of worship, and, as the natives were generally partial to music, I requested singing to be introduced. It is truly gratifying to see with what avidity they listen to this part of devotion. The singing of the women and of the native youth has a pleasing effect, their melody being soft and harmonious.

"My family and the civil officers and their wives act as teachers (*i.e.*, of the native schools), and the average attendance is from sixty to eighty. No language can do justice to the intense anxiety manifested by the adult aboriginal for learning; it must be seen to be properly comprehended. The desire of the natives for learning is not the result of compulsion, but is the free exercise of their own unbiassed judgment. Six months have now passed away since the schools were commenced, and there is not the slightest diminution of their number. The same vehement desire continues unabated. The anxiety of the natives for the attainment of knowledge is great. Their proficiency is astonishing. Some are now able to read in words of three syllables. The juveniles are making considerable proficiency in learning, and several are in writing, and have acquired a knowledge of the relation of numbers, and some can add tolerably correctly.

"The aborigines have shown every disposition to become civilised. The men are employed in rural and other pursuits, and the women are occupied in domestic concerns, for which these people have shown the greatest aptitude, and by their frequent inquiries evinced the strongest desire to become acquainted with the arts of civilised life. Their wild habits are fast giving way. Their corrobories (*i.e.*, violent dances, accom-



panied by vociferous singing) and peregrinations into the bush are less frequent. They are becoming more cleanly in their persons, and are rapidly acquiring industrious habits. The use of ochre and grease, to which they were so much addicted, they have entirely refrained from. The women take particular pains in the arrangement of their domestic economy. Their cottages are carefully swept twice a day. The cleanliness, order, and regularity observed by the inmates of the new cottages in the disposition of their culinary utensils, furniture, bedding, would do credit to many white persons. In sewing, the women have made great proficiency. They make all their dresses. The native women provide fuel for their fires, they also wash their own clothes, bedding, etc. The male aborigines are equally industrious. A road more than half a mile in length, cut through a dense forest in the rear of my quarters to the beach, as well as cross roads, has been done by them. Several acres of barley, the first grown upon Flinders Island, have been reaped by them with the assistance of the civil officers, and the facility with which they executed this branch of husbandry was a matter of surprise to every one. The Big River and Oyster Bay tribes, taken collectively, are the most advanced in civilisation (these and the Stony Creek tribe were the most ferocious and predatory of all the natives), and the western tribes, who occupied a country far remote from any settlement, and, therefore, could not have acquired any previous knowledge of rural pursuits, were equally as ready at reaping as the others. Indeed, their aptitude to acquire knowledge can scarcely be credited.

"The natives now cook their own meat and bake their own bread. The contrast between their present and past condition in this respect is striking in the extreme. In their primitive state their mode of cooking was to throw the animal upon the fire, and when half warmed through take out the entrails, and rub the inside over with the paunch. It was then eaten. Their mode of cooking now is widely different. They follow the example of the whites, and adopt their practices in everything.

"Their chief amusement is hunting, and it seems they soon extirpated the game. When at the settlement, they amuse themselves by dancing, bathing, cricket, trap-ball, playing, and recently they have constructed swings. But the amusement to which they are most partial is marbles. The women join in the dance, and have lately taken a fancy to play at marbles also. I have given several entertainments in the bush, which the officers have attended. These festivities afforded them much amusement."

He concludes an interesting report by saying he believes they have no desire to return to their old haunts and ways of life, and



so long as he was with them to keep their minds and bodies in exercise it is very likely they thought but little on the subject of their former wild existence. But I have been told that the natural longing for their own districts afflicted them greatly after his family left the island, and that they often sat for hours looking at the hills of the main land, which in clear weather were visible from Flinders Island. But after years of confinement at the Wyba-Luma settlement, they lost hope and fell into apathy.

And those who saw the aborigines after their removal from Wyba-Luma to Oyster Cove could never believe them to be part of the same people, who ten years before had given such goodly proof of rapid emergence from barbarity.

The language of the tribes seems to have been simple enough, consisting chiefly of verbs, adjectives, and substantives; and from the few authentic translations that have reached us of conversations, etc., a good deal must have been left to the understanding of the person addressed. A couple of examples taken from one of Robinson's long letters will illustrate my meaning. Thus a man whose wife was dying, and to whom he offered food for her, said: "Tea-noailly—parmatter—panmerlia—linener, noailly," which he translates, "Tea, no good—potatoes—bread—water, no good; meaning," says Robinson, "that his wife had no wish for food of any kind." He gives a portion of a Sunday address that he made to them (for he was an occasional preacher), as follows:—"Matty (one) nyrae (good) Parlerdee (God). Parleevar (native) nyrae (good), parleevar (native) log-ger-nu (dead), tageerer (go) lowway (up) waeranggelly (sky). Parlerdee (God) lowway (up). Nyrae (good) raegee (white man) merrydy (sick), nueberrae (looks) Parlerdee (God) waeranggelly (sky). Kanneru (speaks or prays) Parlerdee (God). Nyrae (good) Parlerdee (God) nueberrae (sees) nyrae (good) raegee (white man) timeme (no) merrydy (sick). No ailly (bad) parleevar (native) log-ger-nu (dead) tageerer (goes) toogunner (down). Raegeowrapper (evil spirit, or devil) uenee (fire) maggerer (stops). Parleevar (native) tyrer (cry). Nyrae (good) parleevar (native) maggerer (stops) Parlerdee (God) waeranggelly (sky), timeme (no) merrydy (sick), timeme (no) taggathe (hungering)."

The frequent occurrence of all the liquid letters in the few words given above will strike every reader. Their language, which is all but lost, was peculiarly soft; and, except when excited by anger or surprise, was spoken in something of a singing tone, producing a strange but pleasing effect on the sense of the European.

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The Chairman announced that the Council had appointed a

Committee for the purpose of promoting psychological research, with power to add to their number, and to confer with other scientific bodies. The gentlemen named to serve on the committee, were Mr. Francis Galton, F.R.S. (Chairman); Dr. John Beddoe; Mr. Hyde Clarke; Mr. David Forbes, F.R.S.; Colonel Lane Fox; Mr. E. Burnet Tylor, F.R.S.; and Mr. Alfred R. Wallace, F.L.S.

The meeting then adjourned.

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FEBRUARY 18TH, 1873.

Professor BUSK, F.R.S., *President, in the Chair.*

THE minutes of the previous meeting were read and confirmed.

ARTHUR ROBERTS ADAMS, Esq., Q.C., D.C.L., St. John's College, Oxford, was elected a member.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

From JAMES BURNS, Esq.—Human Nature for February 1873.

From the ASSOCIATION.—Journal of the Royal Historical and Archaeological Association of Ireland, No. 12, 1872.

From the EDITOR.—The Food Journal for February 1873.

From the EDITOR.—La Revue Scientifique, Nos. 32, 33, and 34, 1873.

From the SOCIETY.—Proceedings of the Royal Society, vol. xxi, No. 141.

From the SOCIETY.—Actes de la Société d'Ethnographie, No. 25, January 1873.

From the REGISTRAR GENERAL.—Statistics of New Zealand.

From the EDITOR.—Nature (to date).

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The Director read the following paper:

NOTE on the MACAS INDIANS. By Sir JOHN LUBBOCK, Bart., M.P., F.R.S., Vice-Chancellor of the University of London.

THE Macas Indians of Ecuador are scattered tribes occupying the country immediately on the eastern side of the Andes, a few degrees south of the equator. They have recently been visited

by Mr. C. Buckley, who spent eighteen months in the district. He brought back with him four prepared heads, two of which I have now the honour of exhibiting to the Society. They belong to a chief named Hilinchima and his wife, Wahari. This chief had also another wife, and the three lived with the man's father and mother, forming a family party of five. The Macas Indians are divided into small tribes, which are constantly at war with one another. This unfortunate family belonged to the Atchwali tribe, and were attacked and murdered one night in their sleep by a party of Xebros Indians, making, however, a desperate resistance, in the course of which they received numerous wounds, some of which are still visible. The heads are very remarkable on account of the small size to which they have been reduced. Though belonging to full-grown individuals, they only measure 11 inches and  $9\frac{1}{2}$  inches respectively.

The process of preparation, according to the account given me by Mr. Buckley, is very simple. The head is removed, and, after being boiled for some time with an infusion of herbs, the bones, etc., are removed through the neck. Heated stones are then put into the hollow, and as they cool are continually replaced by others; the heat thus applied dries and contracts the skin, reducing the head to the size shown in the figure. It will be seen that Mr. Buckley's account confirms that given by M. Barriero.\* A string is then run through the head, which is suspended in the hut, and solemnly abused by the owner, who is answered by the priest speaking for the head, after which the mouth is sewn up to prevent any chance of a reply. The abuse is repeated on feasts and any special occasions.

According to M. Barriero the heads thus prepared are treated as idols, and the first which came to Europe was obtained by a ruse, the owner being assured that the head wished to travel. The same custom and mode of preparing the heads are common to other neighbouring tribes.

The Macas Indians live by hunting, though the women grow some maize and a little yucca, as well as a few plants of tobacco.\* The men use spears, but their principal weapons are blowpipes and poisoned arrows. Their huts are oblong in form, built of palms and thatched with palm leaves. The men are polygamous, but never have many wives. They acquire wives by purchase or by capture, by purchase if the woman belongs to the same tribe, but otherwise by force. The captured women are generally murdered after awhile for the sake of their heads. The women do all the household work.

They have no temples or priests, but are firm believers in witchcraft; Mr. Buckley, however, found it difficult to obtain

\* *Ethnological Journal*, vol. ii, p. 112.

any clear insight into their religious views, and is reluctant to place on record statements which might not be strictly correct. It would have been well if all travellers had been equally cautious. The Macas Indians have doctors, whose remedies however are mainly, if not entirely, magical. If they fail to effect a cure, they are sometimes put to death themselves. The Macas Indians are generally named after animals. When the head of a family dies, he is placed on a bed of split bamboo, the door is fastened up and the hut deserted. Children are buried in the ground without any ceremony. Food and water are generally placed with the dead, but not, as a general rule at any rate, either arms or implements. Property descends in the male line. The Macas Indians are not cannibals. They keep dogs and fowls, and are very fond of pets, especially monkeys and parrots. They count up to ten. The dress consists of a waistcloth, and there is little difference between the sexes. Their feet are bare. They are very fond of ornaments, and some women pierce the under lip. Earrings are also worn. The son succeeds to the father's property. They make rude pottery, which they burn in open fires.

## DISCUSSION.

Mr. FRANKS said :—The shrunk head made by the Jivaro Indians, mentioned by the President as exhibited in the London Exhibition of 1862, was there called an Inca's head! It is now in the Christy collection, and closely resembles those exhibited by Sir John Lubbock. A similar head is in the British Museum, presented by the late Mr. Fagan, H.B.M. envoy to Venezuela. A still more remarkable specimen is preserved in the National Collection, to which it was presented by H.R.H. the Prince Consort in 1853. It is only about one inch in height, and fixed to a stick dressed up as a doll. It was discovered in an ancient grave at Pisco in Peru. An account of the Jivaro heads was published by Mr. W. Bollaert, in the "Transactions of the Ethnological Society", New Series, vol. ii, p. 112, and in the "Intellectual Observer", vol. i, p. 134. The Mundurucus of the Upper Amazon preserve the heads of their enemies, leaving them the natural size, but adding the same strange strings as in the examples before us. Specimens of these heads are engraved in Spix and Martius, "Reise in Brasilien" Atlas, pl. 33, and in Wood's "Natural History of Man", vol. ii, p. 575. Two of them are preserved in the Christy Collection, and together with the Jivaro head form the subject of plate 129 in the "Series of Photographs of the British Museum", published by Mansell & Co.

Mr. HYDE CLARKE observed that what had been stated in the discussion showed that this practice was not isolated. Indeed it is a great question whether there is anything in weapons, monuments, mythology, folk lore, or language in America, North and South, which has not a community with the rest of the world. So far as he had



been able to see with regard to languages, those of America all belonged to the same classes as those of the Old World, up to the same epoch; for a remarkable feature in America was the arrested development due to the cessation of its participation in the great migrations, which culminated in those of the higher races. America shared in what appeared to be the earliest languages of the dark and dwarf races, and so in each series. He therefore doubted whether any indigenous American language would be found as to roots or grammar. There is, in fact, no distinctive American grammar, as supposed. He would only advert to some recent observations he had made. The great language of the South American plains, the Guarani, in roots and grammatical forms agreed with the Abkhass of the Caucasus, and thereby with the great Agaw group. Having noticed that the equivalent of Sky Man was used for the sun by some of the American tribes, he found the same form was adopted by the Sonthals, with whose language that of the tribes most agreed.

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The following paper was read by the author.

*On the RELATION of the PARISH BOUNDARIES in the SOUTH-EAST of ENGLAND to GREAT PHYSICAL FEATURES, particularly to the CHALK ESCARPMENT.* By WILLIAM TOPLEY, F.G.S., Geological Survey of England and Wales.

It has often been observed that the outcroppings of various geological formations are marked by the occurrence thereon of numerous villages, whilst certain neighbouring formations are almost without any. Illustrations of this fact will suggest themselves to every one acquainted with the geology of almost any district in England, and it will be sufficiently illustrated in the course of this paper; but perhaps a few other examples may here be given.

A most striking case is that afforded by the gradual growth of London. All that area on which the older parts of London were built is covered with gravel, which yielded a supply of water. "A map of London so recent as 1817, shows how well-defined was the extension of houses arising from this cause. Here and there only beyond the main body of the gravel there were a few outliers, such as those at Islington and Highbury; and there habitations followed \* \* \* \* It was not until facilities were afforded for an independent water supply, by the rapid extension of the works of the great Water Companies, that it became practicable to establish a town population on the clay districts of Holloway, Camden Town, Regent's Park, St. John's Wood, Westbourne, and Notting Hill."\*

\* Mr. Prestwich's Anniversary Address to the Geological Society, Feb. 1872. "Quarterly Journal of the Geological Society," vol. xxviii, p. liv.

The eastern part of Northumberland is much covered with drift deposits, chiefly Boulder Clay, but with some beds of sand and gravel; from beneath the Boulder Clay, there rise up in many places isolated areas of sandstone belonging to the Coal Measures and Millstone Grit. On these rocky patches most of the ancient villages and the more important hamlets are built. Here the soil is dry, and springs occur at the edge of the clay. Some places are situated on the sand beds of the drift. The sites of these old settlements were determined by the surface soil, but the sites of a great number of the modern villages have been determined by the underlying minerals.

It is interesting to note that nearly all of the settlements in this district which have the characteristic old English names, such as Acklington, Bedlington, Cramlington, etc., are built upon rocky sites or upon sand. In the district lying between the River Coquet and the Tyne, and which is bounded on the west by the bottom of the Millstone Grit, there are in all twenty-three such settlements;\* thirteen of these are on rock, six on sand, and one is certainly on clay; the remaining three I do not personally know.

Throughout the district with which we are more particularly concerned, we shall find that narrow bands of clay rarely have villages, and even houses are scarce. Wide areas of clay are thinly populated, whilst on the intermediate formations of sand or limestone villages abound.

The object of this paper, however, is not so much to examine the actual sites of the villages, although we shall see that in certain cases this is a very important point; but I shall endeavour to show that a relation also exists between the boundaries of the parishes to which these villages give their names, and the great physical features caused by the outcropping of certain strata. This relation I shall illustrate by the Chalk area of England as a whole and its immediate border; coming afterwards to describe in greater detail the Chalk and Greensand areas around that district in the south-east of England, which is known as the Weald.

My information as to the parish boundaries is derived from the index to the Tithe Survey, which is the one-inch Ordnance Map with boundaries inserted. Tythings, liberties, etc., when separately marked, are here considered as parishes.

It is manifest that the chief interest of this question lies in the light which it may be supposed to throw upon our early history, and I presume that it is only for this reason that such a paper as this is accepted by the Anthropological Institute. I feel sure that when fully investigated, this subject will give most

\* Taking the names as marked upon the one inch Ordnance Map.

important aid in historical research. There is one advantage which the facts I now beg to lay before you have over the great mass of material with which historians have to deal. They are absolutely true, and any error connected with them can only lie in our imperfect interpretation. Mr. Kemble well tells us "how the profoundest science halts after the reality of ancient ages, and strives in vain to reduce their manifold falsehood to a truth."\* The historical data which we are now to examine can contain no falsehoods, but only absolute facts, which our forefathers have stamped on the great land divisions of the country. Whilst, however, the chief interest of this question lies in its historical relations, I shall only very briefly allude to this point, but shall content myself with laying the facts before you, leaving their application to others, better fitted than I for this important task.

As the term escarpment is one which I shall often have occasion to use, it may be as well here to give an explanation of it. The word has long been in use in geological works, and by the earlier writers it was employed to denote any hill that had a sharp slope or scarp; but of late years it has acquired a more restricted meaning, and it is now applied only to hills of one particular kind. Mr. Whitaker has perhaps given the best definition of it, as now used: "It may be defined as 'the bounding ridge' of a formation or bed, that is to say, the ridge along which a formation or bed is cut off, and beyond which it does not extend, except in the form of outliers; it follows the line of strike."† Hence we see, that whilst an escarpment is necessarily a hill, all hills are not escarpments.

An escarpment is composed along its whole length of one particular bed or group of beds, and the lower ground at the foot of the escarpment is composed of different beds, geologically lower than the others. In geological language, the beds "dip" into the escarpment, and disappear beneath the beds of which the escarpment is composed, the latter also "dipping" in the same direction. The crest of the escarpment is always the highest ground in the neighbourhood, and from it the country falls gently away to the lower ground, or until another line of escarpment comes on.

As an important point connected with our subject, we may note that escarpments are generally composed of porous rocks, consequently the land upon them is dry. Generally, too, the lower ground at the foot of an escarpment is composed of im-

\* "The Saxons in England," vol. i, p. 4.

† "Memoirs of the Geological Survey," vol. iv, The Geology of the London Basin, p. 357. Some sketches of the Chalk escarpment are given in this memoir, and the range of the escarpment is described.

pervious clay, and therefore the land upon it is naturally wet. There are a few exceptions to this rule,\* but all the escarpments of which I have now to speak are mainly composed of porous rocks.

In the sections given on plate iv (p. 42), the escarpments of the Chalk, Upper Greensand, and Lower Greensand are shown. A simple inspection of these will give a better idea of an escarpment than any verbal description.

In picturing to ourselves the ancient condition of England, and in endeavouring to restore the characters of its various districts as they existed some twelve or fifteen centuries ago, we are very apt to be misled by relying too much upon the present character of the surface, and the names of certain districts. Thus, as regards the area once covered by thick forest; any good map of England will show a succession of so-called forests along the outcrop of the New Red Sandstone, and we are apt to suppose that the whole of that area was remarkable for its woodlands, and that those we now know are but the remains of the great primeval forest. We should probably obtain a more accurate notion of the ancient condition of the land, if we carefully considered the distribution of the soils, and the elevation, aspect, etc., of the various districts. We should then find that the forest lands of modern England are not those which would have been most thickly wooded centuries ago; generally quite the reverse of this. The parts now known as forests are chiefly those in which the ancient woods were least thick. Fine timber may have grown there, as now, but the underwood and the denser forest growth, which chiefly impede the settlement of a country, would have been less thick there than on the heavier soils.

The tracts now known as forests, are mainly those in which the woodland was least worth clearing; the land lay for a long time in a wild uncultivated state, outside the settled and appropriated land—hence the term “forest.”

We cannot have a better example of this than the Weald. It is well known that the whole of this area was a vast woodland tract—the forest of Anderida; and we often hear that the “forests” of Ashdown, St. Leonard’s, etc., are the remains of the old forest. So in truth they are, but they give us no adequate idea of that old forest; for anyone acquainted with the Weald knows that the sandy land of these districts does not produce a thick crop of underwood—or at any rate so thick a crop as the stiffer lands now under cultivation. The densest parts of Anderida were the

\* The Lias, for instance, generally forms a low escarpment around the New Red Sandstone; here the face of the escarpment is composed of shales and thin limestones, the base generally of more porous beds.



clay lands, where only patches of wood now remain. The parts now known as forest were those least thickly wooded.

The present condition of the New Forest is another good example; we see there that the wood grows thickest over the heavier soils. Probably, ere long, these heavier soils, being the best adapted for tillage, will be in great part cleared, and only the light and poorer soils will remain as forest land. But these will give a very false idea of the forest as we now know it.

We may then fairly conclude that the low-lying clayey lands of England were in early times very thickly wooded.

The lighter lands of moderate elevation were probably also in great part covered with wood, but not to so great an extent as the heavier soils, nor were the woods so thick.

England is parted into two great natural divisions, by what is sometimes called the "central plain" of England. On Geological Maps it is represented by the area coloured as New Red Sandstone and Lias. The summit levels of these formations very rarely exceed five hundred feet above the sea, and over most of their area the height of the ground is much less than three hundred feet. There are subordinate ranges of comparatively high ground traversing this area—particularly over the sandstones and conglomerates of the New Red Sandstone; but as a whole, and as compared with the area on either side, it is a plain.

To the west and north-west of this plain, there are the great mountain ranges of England and Wales, formed by the older geological formations—of this district I shall have nothing to say. To the east and south of the great plain there are a succession of hills and smaller plains, which we must now briefly describe.

The Liassic plain is nearly always bounded on the south and east by a bold line of hills, which Geologists term the Oolitic escarpment. The Cotswold Hills are part of this Oolitic escarpment; a great part of the crest is over eight hundred feet in height, and two points exceed a thousand feet. The face of the escarpment is generally exceedingly steep; sometimes, where the freestone of the Inferior Oolite occurs, it is quite precipitous. This, as we shall presently see, is an important point. The face of the escarpment is deeply indented with a succession of coombs and valleys, many of which are thickly clothed with wood, especially beech. From the summit of the Cotswolds (the crest of the escarpment), the ground falls away with a gentle slope to the south. The natural condition of this great plateau or table land is that of open downs, on which enormous quantities of sheep have been fed. Of late years a great change has been coming over the face of the country, and now we find that large areas

are being brought under the plough. In passing from the crest of the escarpment down the "dip slope" of the beds, we sometimes come to rather wet and stiff land formed by some more clayey beds. But in the low ground, forming a well-marked plain or valley, is the far more important wet land of the Oxford Clay. This is separated from the Oolitic country we have just been considering, by a band of limestone, known as the Cornbrash. All through its course this bed is characterised by yielding a rich arable soil. It rarely spreads over any great extent of country, but generally occupies only a narrow band. It is remarkable for the number of villages which are built upon it, and thus it forms a fertile and well populated border to the sterile and comparatively thinly populated Oxford Clay.\*

This clay forms a broad band of stiff and wet land largely laid out in pasture. To the south-east of this there is another escarpment formed by the Coral Rag—of far less height than the Cotswolds. Sometimes there is another broad band of clay—the Kimmeridge Clay, beyond this another escarpment of the Lower Greensand, then a band of Gault clay, and finally, overlooking all these, is the great escarpment of the Chalk.

In east Yorkshire the Lower Oolites form even more important features than they do in the west of England, rising to a greater height and spreading over a wider space. This high land is separated from the Yorkshire Wolds by the clay lands of the Vale of Pickering.

Over the greater part of the eastern moorlands of Yorkshire, formed by the Lower Oolitic rocks, there are extensive prehistoric remains, and the same thing occurs over the Cotswold Hills. Contrasting the abundance of such remains over these areas with the absence of them over the clayey districts, and recalling too the fact that the natural soil for thick woodland is clay, we are warranted in concluding that the primitive condition of these high lands did not greatly differ from that which we now observe.

The facts to be detailed in this paper can best be seen by an examination of the Chalk escarpment; we will therefore now describe that.

The Chalk escarpment is one of the best marked physical features in England. It is a steep-sided range of hills, having its summits remarkably level. From the crest of the escarpment the ground falls gradually away with a slope only very little

\* These remarks refer to those parts of England where the drift deposits are unimportant or absent. Where the country is thickly covered with drift, the distribution of the population is wholly governed by that, and has no relation to the underlying rock. In the districts to which this paper especially refers, the drift deposits are not of great importance, and do not much obscure the features of the rocks.

less than the dip of the beds. This slope geologists call the "dip slope," the steep face is the "scarp slope." The crest of this escarpment seldom falls below 500 feet above the sea for any long distance, and it only rarely exceeds 800 feet.

At the foot of the escarpment there crop out the beds immediately underlying the Chalk, whatever they may be. Sometimes the Upper Greensand makes a broad terrace at its foot, sometimes, when the Upper Greensand is thin or absent, the Gault clay immediately succeeds.

Everywhere at the foot of the escarpment there is a line of villages, often quite close together. If the Upper Greensand be present the villages generally stand on that. This forms an excellent arable soil, and always yields water to wells sunk through it. If the Upper Greensand be absent the villages stand quite at the base of the Chalk, on the lowest slope of the escarpment, just where this slope is changing into the flatter land of the Gault. Here, on the outcropping of the lowest beds of Chalk, we also find an excellent arable soil, whilst springs break out at the outcrop of the Gault.

The face of the Chalk escarpment is almost always open land; its slope, sometimes amounting to 30 degrees, is too steep for the plough, but in some places there are traces of terrace cultivation. Patches of wood here and there occur, chiefly of box, juniper, or yew; occasionally there are larger clumps of beech.

Ascending to the crest of the escarpment we find two very different kinds of scenery. Where no drift occurs there is a wide open country, either all covered with a short evergreen turf, or broken up into large arable fields. There is but little wood, and what there is is mostly beech. Villages over this area are mostly found in the long winding valleys, few being met with over the higher ground; but here we find abundance of Celtic remains, hill-forts, tumuli, intrenchments, etc. Where there is a drift-covering to the Chalk we find a good deal of wood on the higher ground, or else the land is in great part under the plough. Here Celtic remains are comparatively rare.

The Chalk commences on the east coast, near Flamborough Head, and forms a bold escarpment, overlooking the Vale of Pickering. Here it runs nearly east and west; but then turns southwards, still presenting a bold escarpment to the west, overlooking the Vale of York. The higher lands of the Chalk are here bare; they are covered with tumuli and intrenchments which have yielded a rich harvest to the labours of Canon Greenwell and others. These high lands are the Wolds of Yorkshire. They are divided from the Wolds of Lincolnshire by the river Humber, and these from the Chalk of Norfolk by the Wash. From the northern part of Norfolk a band of Chalk runs

through Suffolk, Cambridge (Gog-Magog Hills), Herts, Bedford, Bucks, Oxfordshire, Berks, Wilts, and Dorset to the English Channel. This line is broken on the south side of Oxford by the valley of the Thames; for some miles on either side of the Thames the range is known as the Chiltern Hills.

Over the western and the north-western parts of this line Celtic remains occur, and also over the western part of the large area occupied by Chalk where Berkshire, Wiltshire, and Hampshire join. The meeting point of these counties is Inkpen Beacon, 972 feet, the highest point of the English Chalk,\* and also the highest point in the south-east of England.

The Chalk of the eastern part of Hampshire is much covered with drift, so too is that of Surrey and Kent; in these places Celtic remains are comparatively scarce. In Surrey most of the Chalk is bare; and here Celtic remains abound.

I have said that everywhere along the foot of the Chalk escarpment there is a line of villages; let us now examine the boundaries of the parishes belonging to those villages. In nearly every case the *parishes ascend the escarpment*, generally taking in a good deal of the table-land above, but occasionally ending off at or near to the crest. In the other direction they extend over the Gault, and more or less over the underlying beds. As the villages are often quite close together the parishes are narrow, and thus we find a long line of parishes along the Chalk escarpment, many of which are remarkably narrow in proportion to their length.†

The points to be especially noticed are: that villages at the foot of the Chalk escarpment send their parishes up the escarpment. This is the case not here and there only, or in special districts, but throughout the whole of the Chalk escarpment of England. Again, where villages occur on the Chalk, near to the escarpment, they very rarely send their parishes down the escarpment; this again is true, not of particular districts only, but of the whole Chalk area of England. Sometimes they extend to the crest of the escarpment, but very rarely do they go down the slope.

We will now turn to the Wealden district and examine the distribution of its border parishes more minutely. To the geologist the Chalk escarpment is the boundary of the Weald. The true boundary of the ancient Weald is somewhat doubtful, probably it was generally the Lower Greensand escarpment.

\* Differing only five feet from the highest point of the Lower Greensand, which is at Leith Hill, in Surrey, 967 feet.

† The longer diameter of the parish is along the "dip" of the beds, or at right angles to the "strike;" and thus it is possible to determine the strike of the beds in many districts by a glance at the parish boundaries.



The highest strata of Sussex are those underlying the flat land of Selsea. As we advance to the north from Chichester we find the ground gradually rising, and as gradually exposing lower beds. Soon we enter the Chalk country, which ends, as in the areas already described, in a bold escarpment. The western part of Sussex resembles the eastern part of Hants in being a good deal covered with wood, but the Chalk of East Sussex is mostly in open downs. Along the foot of the escarpment there is a terrace, more or less broad, of Upper Greensand; this generally ends with a small escarpment which overlooks the Gault.

On the true Gault area of Sussex, where it occupies its normal position as a band of flat stiff land below the Upper Greensand, there is only one village, Heyshot, on the south of Midhurst. On the parallel band of Upper Greensand there are no less than 35. In Hampshire the Upper Greensand terrace resembles that of West Sussex, and here too the villages are built on it. Thirteen Hampshire villages are found here, whilst there are none on the Gault.

Through the western half of Surrey the dip is high and the feature of the Upper Greensand unimportant. Through Kent the Upper Greensand is thin, and in some places apparently entirely absent. Still, through these counties the villages occur all along the foot of the Chalk escarpment. In Kent there are 19 in this position, and only 2 on Gault. Perhaps, indeed, only one is really so, for Trottescliffe is built quite at the top of the Gault and partly on Chalk. Brooke, near Ashford, is a remarkable parish. It is wholly on Gault clay, which here spreads over an unusually broad tract. The parish is small, its total population, according to the census of 1871, was only 141; its area is 582 acres. It is the only parish in the Weald that is wholly on Gault.

Taking the Chalk escarpment as the boundary we find that in the whole of the Weald there are 397 towns and villages, of which 73 (or 18 per cent.) are along the narrow band of Upper Greensand or at the base of the Chalk escarpment. In the Wealden district of Sussex (that is, within the Chalk escarpment) there are 176 towns and villages, of which 35 (or 20 per cent.) have a like position. Sussex is therefore in this, as in many other respects, an excellent example of the whole Wealden area.

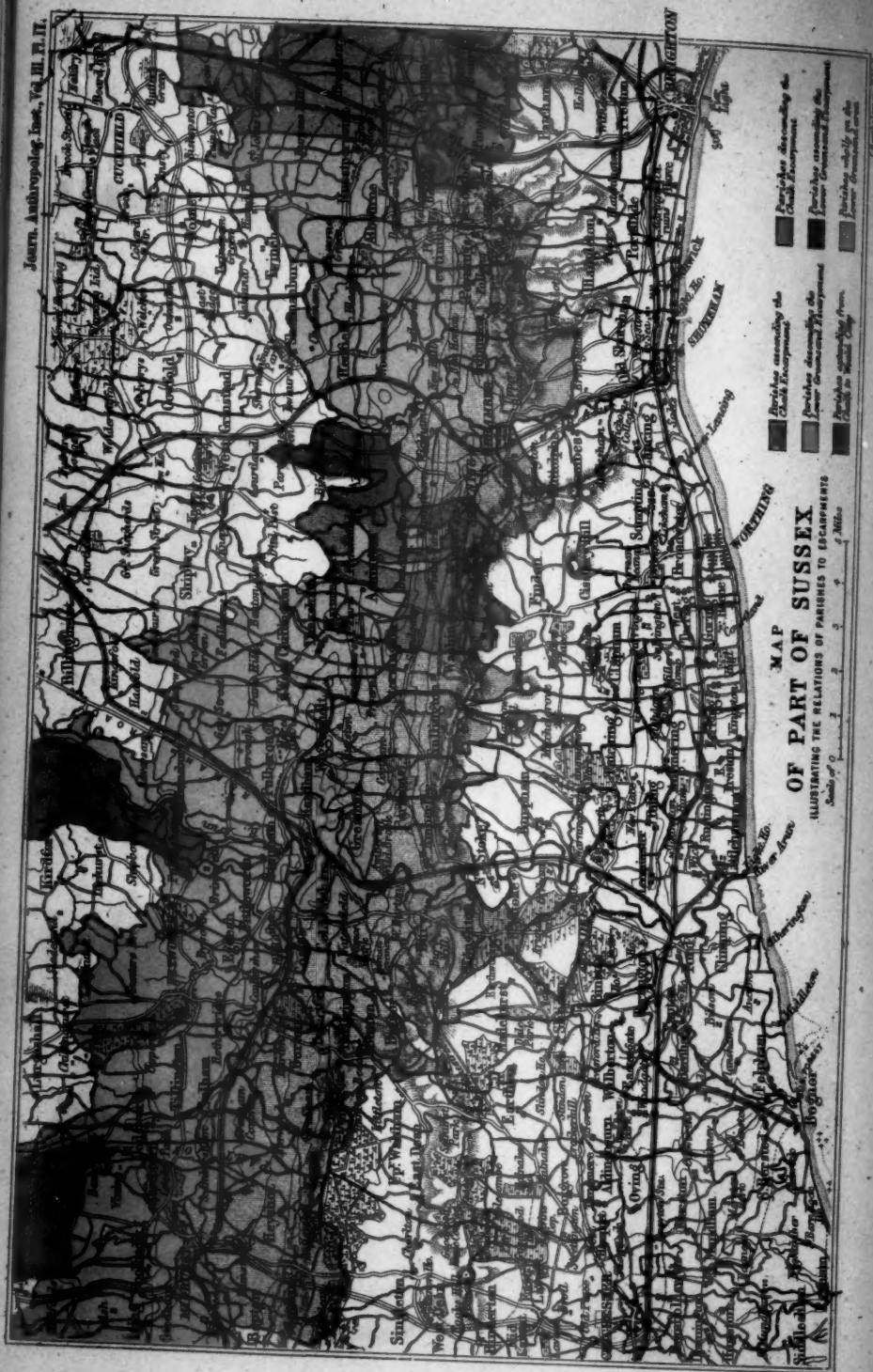
The Lower Greensand varies much in character, and consequently in the character of the country which it forms. It is important that we should understand this. Generally the land overlying it is light and dry; but there is one division, the Sandgate Beds, which often has a good deal of clay. The towns

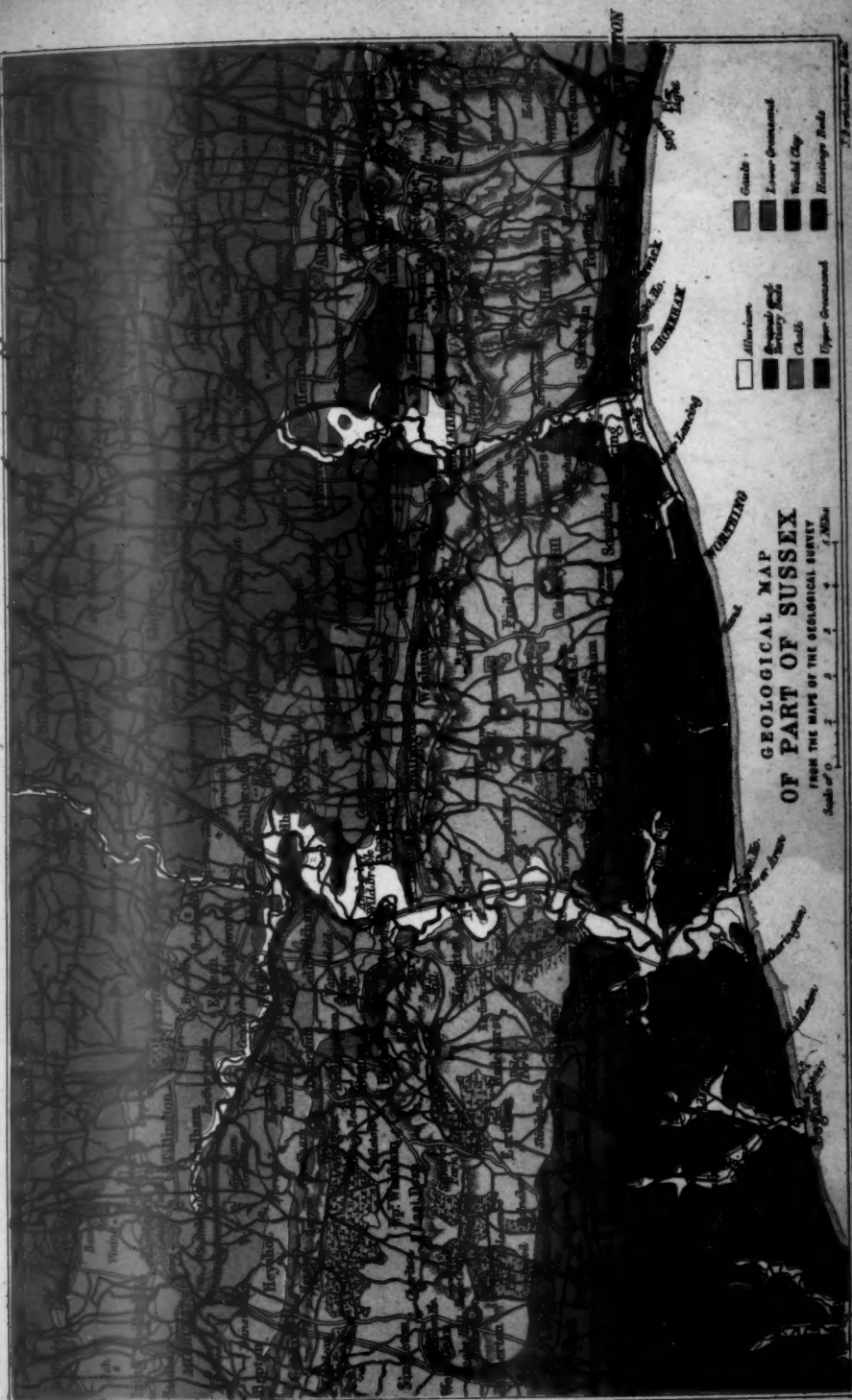
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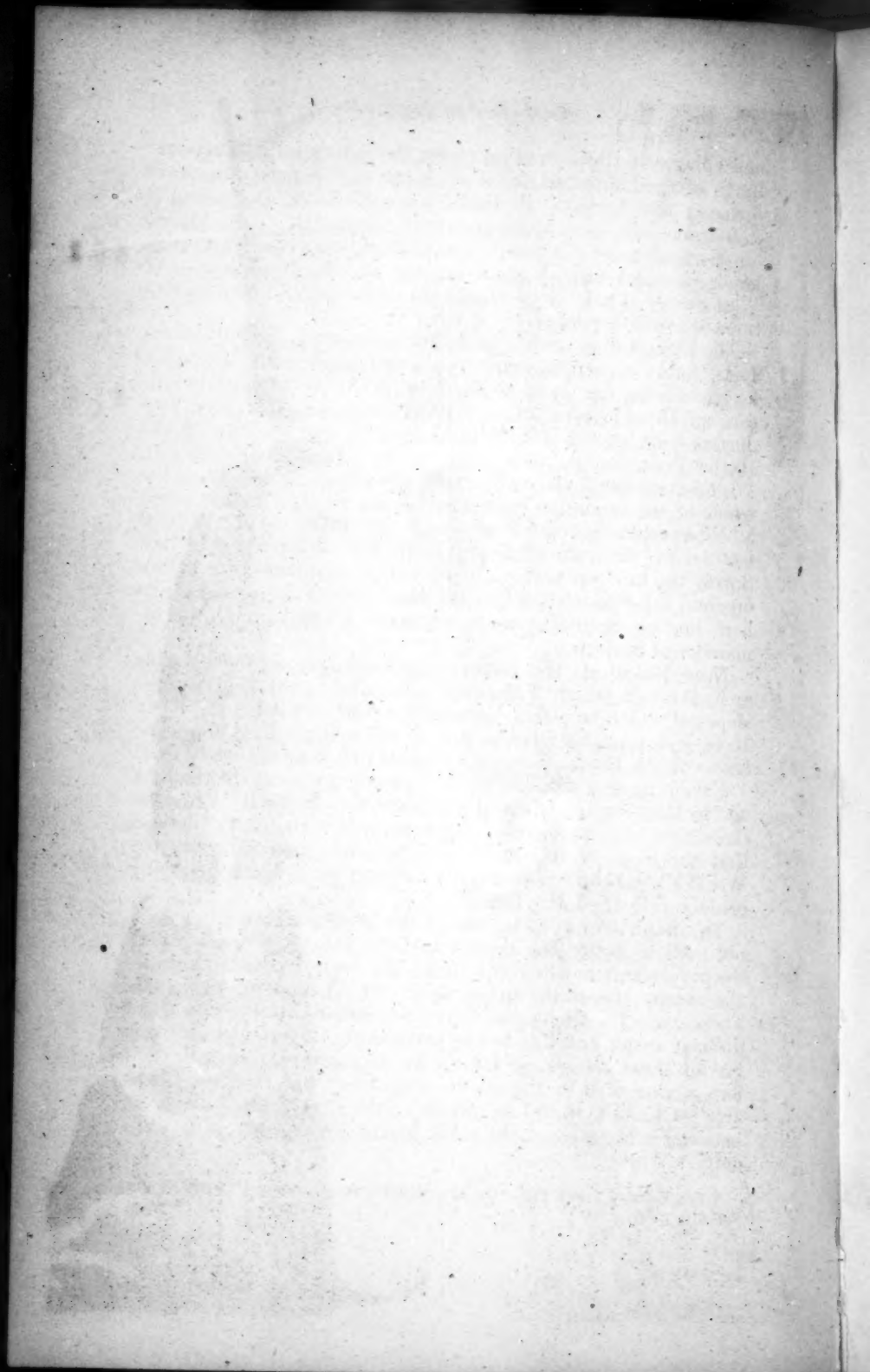
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and villages on this formation prefer the lighter soil. There are 98 in all, and amongst them are some of the most important towns in the district. In East Sussex the Lower Greensand is thin and makes but a small feature on the ground. In the western part of Sussex it swells out in thickness, occupies a much larger area, and forms a good escarpment. In Hampshire and West Surrey it reaches its maximum thickness, and here its features are well developed.

The highest division of the Lower Greensand, the Folkestone Beds, forms a barren, sandy soil; and throughout its whole length (excepting near Folkestone, where it is slightly calcareous) there is a line of heaths and commons. The most productive part of the Lower Greensand is near the top of the Hythe Beds, and on this many of the villages are built. In West Surrey the divisions are not very apparent, and almost the whole of the formation consists of barren sands. Here it forms a bold escarpment, with a crest varying from 500 to nearly 1000 feet high; the summit being Leith Hill, 967 feet. In East Surrey the outcrop narrows, chiefly in consequence of a higher dip, and the character of the soil improves. Villages and towns here become more frequent, and continue so through the remainder of its course.

Near Maidstone the Lower Greensand spreads over a wide area, through which there runs the valley of the Medway, the slopes of which here form some of the most fertile land in Kent. It is, and probably always has been, well-peopled, for some traces of the Roman occupation are found in nearly every field.

Excepting near Ashford, where the country is somewhat faulted, and in East Sussex, where the beds are thin and soft, the Lower Greensand makes a good escarpment, and it should be noticed that the slope of it is continued for some distance down the Weald Clay, before reaching the flatter ground which generally characterises the latter formation.

To complete our description of the Wealden border, we must not omit to notice the deep transverse valleys, through which the rivers run in their way from the central country towards the sea on the south, and towards the Thames on the north. These carve the Chalk and Lower Greensand districts into quite distinct areas; and this fact is particularly important in Sussex, for all these valleys, as far up as the Lower Greensand, were formerly covered by the sea at every tide; and thus the Chalk area of Sussex would be divided into five distinct divisions, between which communication would be kept up with difficulty.\*

\* See Colonel Lane Fox "On the Hill Forts of Sussex." *Archæologia*, vol. xlii, p. 30, 1809.

The relations of the parishes to the escarpments cannot well be understood from descriptions alone. As it is impossible in this paper to give maps of the whole of the Wealden area, I have selected one part, the western half of Sussex, to illustrate the general principles.\*

Plate III shows the geology of the district. Where the Chalk ends on the north, there is a steep hill—the Chalk escarpment. The northern limit of the Lower Greensand is also an escarpment; low to the east, higher to the west, but always, in this district, of less height than the Chalk escarpment. The Weald Clay is comparatively flat land; the Hastings Beds are hilly.

Plate II shows the parishes classified according to their relations to the escarpments, which relation can be understood at once by comparing this map with the sections on Plate IV. The coloured bars over the sections show the extent of the parishes; these colours are the same as those used on the parish map for parishes having a like position.†

As we have already seen to be the case in other parts of England, so in the Weald, the face of the Chalk escarpment belongs to a parish whose village is at or near the foot of that escarpment; in the map, such parishes are coloured *red*. Generally the village stands on the Upper Greensand. Sometimes it stands upon the Lower Greensand; this is more often the case on the north side of the Weald, where the Upper Greensand is thin or absent.

The parishes coloured *red* are those which do not extend beyond the Lower Greensand area; but where that area is narrow the parishes often extend right across, from the Weald Clay to the Chalk: such are coloured *violet*. As the villages belonging to such parishes are *below* the Chalk escarpment, either on the Upper or Lower Greensand, and as their parishes extend *up* the Chalk escarpment from below, we must reckon these with those coloured *red*; although they will also be included in another class to be considered presently.

Taking then the parishes coloured *red* and *violet*, we find that around the whole of the Wealden area they number 119 (91 of which would be coloured *red*, 28 *violet*). That is to say, that around the Weald there are 119 parishes *ascending* the Chalk escarpment, their villages lying *below* that escarpment.

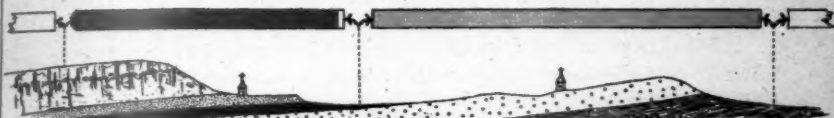
The exceptions to this rule—those in which a village *above* the escarpment, on the Chalk, sends its parish *down* that escarp-

\* All the points were fully illustrated, when this paper was read, by the Geological Survey Map and Maps of the Tithe Survey, both of which are on the scale of one inch to a mile.

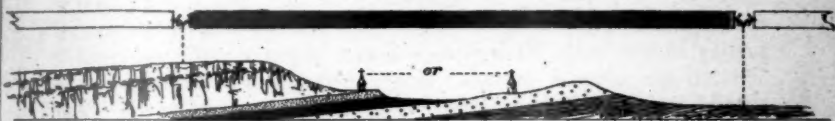
† The same colours are used on the Geological Map, but this is only for greater convenience in printing.

# DIAGRAM-SECTIONS SHOWING THE RELATION OF THE PARISH BOUNDARIES AROUND THE WEALD TO THE CHALK AND LOWER GREENSAND ESCARPMENTS.

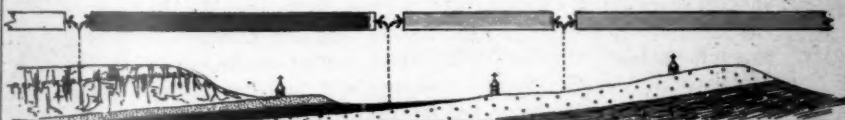
## 1. USUAL ARRANGEMENT:



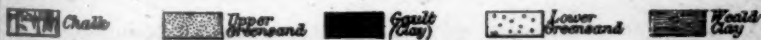
## 2. WHERE LOWER GREENSAND IS NARROW:



## 3. WHERE LOWER GREENSAND IS WIDE:

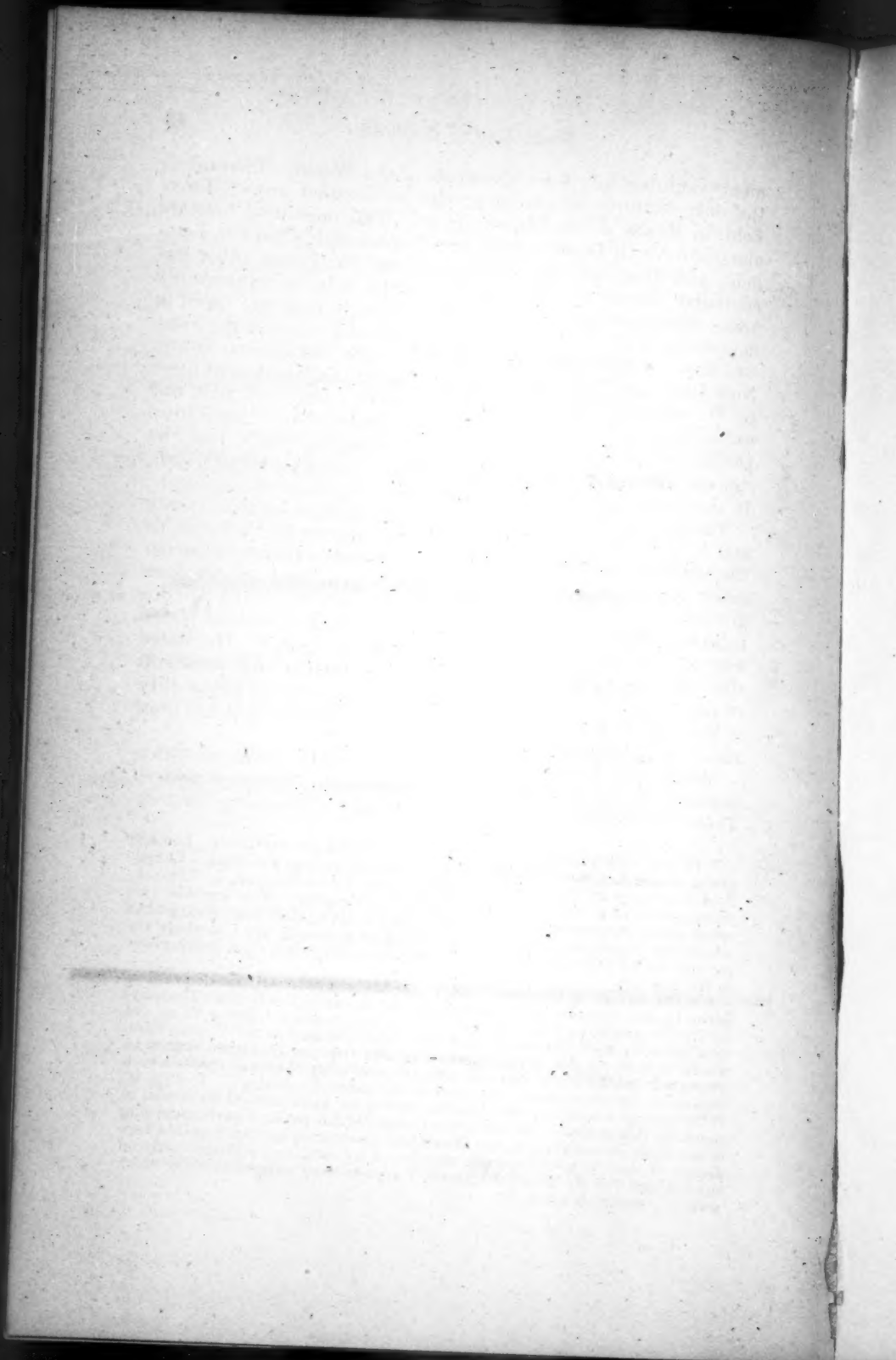


## 4. ARRANGEMENT WHICH RARELY OCCURS:



*Shows the positions of the Villages. The coloured bars above show the extent of the Parishes; the areas of these parishes are shown by the same colours on the Map (Plate )*





ment—number only 6 for the whole of the Weald. Piecomb is the only example in our map; this is coloured *green*. Froxfield, in Hants, is another exception. The remaining four are along the North Downs; they are Wanborough, Chaldon, Tatsfield, and Hastingleigh. Three of these have some other exceptional character, which may perhaps help to explain the first. The most easterly case is Hastingleigh, in Kent; but it is noteworthy that the part of this parish which forms the crest and slope of the Chalk escarpment is called Brabourne Down. Now Brabourne is a village at the foot of the escarpment close by, the parish of which ascends the escarpment; and it is not unlikely that at one time Brabourne Down was *in* Brabourne parish, for it is very commonly the case along the Chalk, that the "down" bearing the name of any parish is within that parish. If this were so in this case there would be no exception here.

Tatsfield, in Surrey, is the border parish between that county and Kent.\* Wanborough is a "liberty" on the Hog's Back. To the south of the Hog's Back there is a wide expanse of barren sandy land, which was probably always to a great extent open ground, or only thinly wooded. Mr. Kemble frequently alludes to this district, and points out that many of the names of places here are derived from the names of Saxon gods.† He states that the whole district "seems to have been a very pantheon of paganism;" and of Wanborough he says:—"in all probability it has been in turn a sacred site for every religion that has been received in Britain."

Where the Lower Greensand area is wide, there are often parishes lying wholly on that formation (coloured *yellow*). There are 53 such parishes in the Weald. The most common

\* It is a very remarkable fact, that out of the six exceptions, two are places whose names contain the word *field*—Tatsfield and Froxfield. Limpsfield is a village at the eastern extremity of the Lower Greensand of Surrey, whose parish only just touches the Chalk escarpment. This and the two other places just named, are the only parishes along the Chalk escarpment whose names contain the word *field*. We shall presently see that there are reasons for believing that such names may be of later date than many others in the district.

† "The Saxons in England," vol. i, pp. 344 and 351. Of the derivations given by Mr. Kemble, that which refers the Hammer Ponds (near Thursley) to Thor is particularly unfortunate. They are ponds belonging to an old iron furnace; such "hammer ponds" are very common in the Weald. Elsewhere he says, "Zahn, whose services to Old German literature cannot be overrated, speaks wisely when he calls the similarity of proper names a rock 'on which uncritical heads are much in the habit of splitting.'" *Ibid.*, p. 41. With such an example as Mr. Kemble before us, one had need be careful in touching this subject. In subsequent pages of this paper, I have something to say upon place-names in the Weald, as illustrating the main points here discussed; but by avoiding rash theories of my own, and relying chiefly on the authority of Mr. Kemble himself, I hope to have escaped the fate which awaits "uncritical heads."

arrangement is for the Chalk parish to extend on to or close to the Lower Greensand; beyond this, another village occurs, the parish of which extends *down the Lower Greensand escarpment*. All parishes coloured *blue* are of this kind. Their villages are *above* the Lower Greensand escarpment, but the parishes extend down that escarpment. That is to say, the arrangement is exactly the reverse of that which obtains with the Chalk escarpment. There the villages below the Chalk send their parishes up the escarpment, very few villages *on* the Chalk sending their parishes down the escarpment. With the Lower Greensand, on the other hand, the villages on that formation generally extend their parishes *down* the escarpment, and it is only rarely that villages below the greensand (on the Weald Clay) extend their parishes up that escarpment. All such exceptions are coloured *brown*; they are 15 in number.

The number of parishes conforming to the rule as concerns the Lower Greensand escarpment is 60. But to these must be added the 28 which extend from Chalk to Weald Clay; making 88 in all, against 15 exceptions.

Summarising the facts examined, which are illustrated in plate IV, we find that the face of the Chalk escarpment around the Weald is divided amongst 125 parishes; 119 of these belong to villages lying *beneath* the escarpment (figs. 1, 2, and 3), only 6 to villages lying *on* the Chalk above (fig. 4). The face of the Lower Greensand escarpment is divided amongst 103 parishes; only 15 of these belong to villages lying *beneath* the escarpment (fig. 4), whilst 88 belong to villages *on* the Lower Greensand above (figs. 1, 2, and 3).

In seeking for the cause of this apparently strange difference, we must endeavour to realize the condition of the country as it existed when the settlements first took place. Taking again that part of Sussex represented in plates II and III, as an example, we can have but little doubt that the whole of the Chalk area, as far west as the river Arun, was quite open land. To the west of this there may have been, as now, some woodland. The flat land along the coast must have been partly wooded. The face of the Chalk escarpment would be open land. The country between the foot of that escarpment and the foot of the Lower Greensand escarpment would have been very various in character. The more sandy and barren parts would be partly open or only thinly wooded, whilst the better and heavier soils would have in many places a thicker crop of wood; but nowhere over this area would the forest be so thick and impenetrable as over the Weald Clay. The Gault probably produced a dense growth of underwood, but the area covered by this bed is small.

The greater part of the valleys of the Chalk country are

now quite dry, and water is got by sinking wells through the gravels at the bottoms of their valleys. In the extreme west of Sussex there are some valleys in which, after very wet seasons, water now runs; such are in that neighbourhood called "Levants." Similar intermittent streams are frequently found in other Chalk districts. One of the best known is that which occasionally runs in the valley between Merstham and Croydon; this is called the "Bourn." In Kent such streams are called "Bourns" or "Nailbourns;" in Wiltshire and Dorsetshire they are generally called "Winterbourns;" in Yorkshire they are known as "Gypsies" or "Gipsies."

These streams now only run after unusually rainy seasons; but it is very probable that the rainfall was greater in former times than now, and if so, such streams would have run permanently.† The permanent water-level in the Chalk being higher than now, there would be many springs along the escarpment in places where now there are none, and where water is only obtained by sinking wells through the Upper Greensand.

Bearing these facts in mind, I think we are justified in concluding that the earliest settlements in the south of England would take place along the wider Chalk valleys, in which water could be found, and along the foot of the escarpment, where the settlers found good water, productive soil, and a sheltered situation. In the division of land consequent upon these settlements each knot of settlers would take the down-land behind them on which to pasture their sheep, the good land around the dwellings would be taken under the plough, and the forest-land in the other direction, whether wood or open glade, would afford mast for swine and pasture for cattle.

That these settlements were the first formed and that the land now belonging to them was the earliest appropriated is, I think, evident from the fact that the villages on the Chalk plateau so rarely extend their parishes down the escarpment, as we might otherwise expect them to do, for in this direction they would find the best land. It is not because parishes do not descend hills on which their villages are built, for we have seen that in the Weald the villages on the Lower Greensand generally do send their parishes down the Greensand escarpment. In this matter the Chalk and Lower Greensand escarpments act exactly the reverse of each other.

Later settlements within the Weald necessarily took place further in, that is to say upon the Lower Greensand. In the

\* The G is pronounced hard.

† See remarks to the same effect by Col. Lane Fox, on p. 47 of the paper already quoted.



division of land consequent upon these later settlements, the boundaries were already roughly formed in one direction, that is towards the Chalk escarpment. In the other direction, towards the centre of the country, the land was all unappropriated, and in this direction the settlers extended their land. Probably it is mainly to these later settlements, which first penetrated the forest, that we owe the large number of names within the Weald ending in *den*, *fold*, *field*, *hurst*, etc.

The distribution of local names having such terminations has been studied by Mr. Kemble, Mr. Taylor, and others. The full significance of the facts, however, only comes out when we study them in connection with the physical divisions of the country.

In the table here given, the names within the Weald are grouped according to the geological formations upon which they occur. It will be seen how these names swarm upon the Weald Clay and Hastings Beds, that is to say, in the district bounded by the Lower Greensand escarpment; and how rare they are upon the Lower Greensand, and at the foot of the Chalk escarpment.\*

It is just this district in which they so thickly occur that is generally known as "the Weald." The ancient forest of Ande-rida probably had the same limits, though the boundary of this is doubtful; but to the west it probably extended, in a less dense condition, over Hampshire—here too there are many *hursts*.

The distribution of the *dens* is very remarkable. They occur most thickly in the eastern part of the Kentish Weald, and diminish westwards, comparatively few being met with on the Weald Clay west of *Marden*. On the Hastings beds they continue in force further west, but there is still a marked decrease in that direction. At the extreme south-western corner of Kent there is *Bearden Farm*; but on the west of this, through Surrey, not a single case occurs on the Ordnance Map.† *Dens* are very rare on the adjoining Weald Clay of Sussex; here, and on the Weald Clay of Surrey, they are apparently replaced by *folds*. There are more *dens* on the Hastings beds of Sussex, increasing in frequency as we approach the Kentish border.

\* In this table (which is constructed from the names given on the Ordnance Maps) all place-names, whether villages, hamlets, or farms, are taken as of equal value. It should be remembered that the areas of the formations are of unequal size in the different counties. Surrey has only a small piece of Hastings beds, Hampshire has none, and only a very small area of Weald Clay. If the object of the table were to show the relative numerical distribution in each county, it would be necessary to calculate the percentage according to area.

† There is *Dean Farm* close by the railway, 2½ miles north of Horley; this is in a slight hollow, close by the stream. There is *Jardens Farm* on the south-east of Capel; but this seems to derive its name from a former owner. It is moreover on the border of Sussex.

SUMMARY OF THE NAMES OF PLACES in the Weald (within the Chalk escarpment), ENDING IN

	-hurst.						-den.						-field.						-fold.						TOTAL OF NAMES (hurst, den, field, fold) in Wealden part of County.
	Base of Chalk Escarpment and Upper Greensand.	Gault.	Lower Greensand.	Weald Clay.	Hastings Beds.	TOTAL FOR COUNTY.	Base of Chalk Escarpment and Upper Greensand.	Gault.	Lower Greensand.	Weald Clay.	Hastings Beds.	TOTAL FOR COUNTY.	Base of Chalk Escarpment and Upper Greensand.	Gault.	Lower Greensand.	Weald Clay.	Hastings Beds.	TOTAL FOR COUNTY.	Base of Chalk Escarpment and Upper Greensand.	Gault.	Lower Greensand.	Weald Clay.	Hastings Beds.	TOTAL FOR COUNTY.	
KENT (S. and S.W. part)	...	...	3	25	20	48	...	2	8	52	42	110	...	...	5	1	4	10	...	...	...	2	2	3	170
SURREY (S. part)	...	...	3	31	...	34	...	1	...	...	...	1	...	...	2	14	2	18	...	...	...	9	...	9	62
SUSSEX (N. and N.E. part)	2	...	7	45	58	112	...	2	2	2	34	38	...	...	2	21	30	56	...	...	...	23	3	26	232
HANTS (E. part)	1	...	...	...	...	1	...	...	...	...	...	...	2	...	1	2	...	5	...	...	...	...	...	...	6
Total for Geological Formations	3	...	13	101	78	195	...	2	11	54	82	149	...	2	10	41	36	89	...	...	...	32	5	37	470
Total for whole Wealden area.	...	...	...	...	...	195	...	...	...	...	...	149	...	...	...	...	...	89	...	...	...	...	...	37	

There are some *deans* and *dens* on the Sussex Chalk; the former are apparently always in *valleys*. Of the *dens*, there is one (Finden) in a broad valley north of Worthing. There are four Mardens near the western boundary of Sussex; they are partly on high ground, and are on that part of the Sussex Chalk which is now in great part wooded, and which was probably more wooded formerly. According to Lower, however, these places are misnamed.\* Finden is the vulgar pronunciation of Findon, its proper name; in "Domesday" it is written Findune. The Mardens are in "Domesday" Merdon.† Very few of the Kentish dens are found in "Domesday," but what there are appear as den or dene. These places on the Sussex Chalk are therefore not *dens* at all.

With regard to such names, Mr. Kemble says, "In looking over a good county map we are surprised by seeing the systematic succession of places ending in den, holt, wood, hurst, fold, and other words which invariably denote forests and outlying pastures in the woods. *These are all in the Mark*, and within them we may trace with equal certainty the *hāms*, *túns*, *worðigs*, and *stedes*, which imply settled habitations. . . . I will lay this down as a rule, that the ancient Mark is to be recognised by following the names of places ending in den (neut.), which always denotes *cubile ferarum*, or pasture, usually for swine."‡

It is doubtful if so much information as is here supposed, can be obtained from the study of local names alone; even in Kent, where the dens occur most frequently. There can be little doubt, however, that Mr. Kemble has here given the correct meaning of the termination *den*, whilst those who regard it as indicating a wooded *valley* are most certainly wrong. Many of the villages having such terminations are on the tops of hills. It should be noted that, whilst the villages of the Hastings Beds are generally on sand, some of these dens have Clayey sites, as Bennenden and Rolvenden; Tenderten is in great part built upon a Clay bed (Grinstead Clay), which occurs in the Tunbridge Wells Sand.

These dens, folds, and fields we then find to be especially characteristic of the interior of the country, which we suppose to have been the latest settled. But near the foot of the Chalk escarpment, and over the Chalk country of Sussex generally,

\* "History of Sussex;" vol. i, p. 177; vol. ii, p. 217; "The group of villages called 'the Mardens,' lies on the Downs, and its derivation from the Saxon *mor*, a waste heathy land, and *dun*, a hill, answers to the geographical position and ancient state."

† Hussey prints it Meredone, "Churches of Kent," etc., p. 179.

‡ "The Saxons in England," vol. i, p. 480. Mr. Kemble's ingenious theory of the "Court of Dens" at Aldington, is discussed and rejected by Mr. Furlley, in his "History of the Weald of Kent." 1871.

there are names of another class, of even greater interest. These are the names containing *ing*, which are as abundant on and near the Chalk, as the dens and folds are in the central country.

Mr. Kemble regards these as indicating the family settlements of the Teutonic invaders. He also distinguishes between those names in which *ing* is the final syllable, and those in which it is supplemented by *ham*, *ton*, etc.; regarding the former as the original settlement of the family, the latter as offshoots from earlier settlements of the same family.\* According to this theory the Folkingas would originally have settled at Folking, a hamlet at the foot of the Chalk escarpment, in the parish of Edburton; an offshoot from this would have settled at Folkington, near Eastbourne, also at the foot of the Chalk escarpment.

This theory fits perfectly with that advanced in this paper; that the settlements on and immediately surrounding the Chalk are the oldest. All along the foot of the Chalk escarpment, names in which *ing* is the final syllable abound; they also occur near the coast, but they are rare upon the Lower Greensand, and are almost unknown in the interior of the Weald.

Mr. Taylor adopts Mr. Kemble's theory, and illustrates it by tabulating the "original settlements," and the "filial colonies" in the various English counties. He shows that the proportion of the former to the latter is greatest in the east and south-east of England; whilst in the west, north-west, and north of England, original settlements are exceedingly rare.†

This is as it should be; but in order to establish this theory, it is necessary to show that the greater number of the filial colonies have names which are also found amongst the original settlements. This has not been done; and I doubt if the attempt to do so would be very successful. Certainly in the south-east of England there are a large number of filial colonies which cannot be referred to any known original settlement; whilst, as of course follows from this, there are but few original settlements from which filial colonies can be traced.

Mr. Taylor has drawn attention to the fact that in that part of French Flanders which is nearest to the Weald, there is an abundance of English names; this he illustrates by a map, in which the position of each such name is marked. In this district, lying between Calais, St. Omer, and Boulogne, there are 22 names ending in *ton*; more than 100 ending *ham*, *hem* or *hen*; and also more than 100 containing the syllable *ing*. He also gives a list of names in that district which are likewise found in England; showing that "the same families which gave

\* *Loc. cit.*, p. 479.

† "Words and Places," 3rd edition, p. 86, 1873.



their names to our English villages, also made a settlement on that part of the French coast which lies within sight of the English shore." "Again, if any importance is to be attached to Mr. Kemble's theory of original and filial settlements, the Saxon villages in France must all have been *filial settlements*. We find that *ing* is never a mere suffix; in every case it forms the medial syllable of the name."\*

Mr. Taylor shows that such names are absent along the coast north-east of Calais, and also in the inland country to the east. From these facts he infers that this part of France was *settled by colonists from England*. Whatever may be the value of this theory, I may mention, as additional evidence in its favour, that some of these Flemish names (all of which are of filial colonies) can be referred to original settlements in the south-east of England:—as Bazinghen, Berlinghen, and Halinghen, to Basing, Birling, and Halling.† Others still survive amongst us as surnames:—as Hardingham, Maninghen, and Waringzelle, in Harding, Manning, and Waring.

The district in question is geologically a continuation of our English Weald. It is divided by the Chalk escarpment into two areas:—Le Bas Boulonnais, below the escarpment, which corresponds to the Weald; and Le Haut Boulonnais, which includes the Chalk country.

It is a curious circumstance that the boundaries of the Communes in the Bas Boulonnais have the same relation to the Chalk escarpment as have those of the parishes in England. There is a line of villages at the foot of the escarpment, and the Communes belonging to them extend up the escarpment; whilst the Communes whose villages stand above the escarpment, on the Chalk plateau, do not descend that escarpment.

This paper might be greatly prolonged by giving illustrations of other lines of English escarpments. We must, however, be content with the following remarks. First, it should be noticed that where the features of a country, from special geological causes, somewhat resemble escarpments, the village and parish boundaries act in regard to these features as they do with the escarpments.

The Mendip Hills rise steeply from the comparatively low ground around, and form a feature of even greater importance than many escarpments. The high land of the Mendips was always open land, like the Chalk; whilst much of the low

\* *Loc. cit.*, pp. 87-90.

† Possibly also Pelinghen to Poling. I take the spelling of these names from the French Government Map; the boundaries of the Communes are marked on that.

ground around was covered with wood. Along the foot of the Mendips there is a line of villages whose parishes extend up the hill behind.

On the west of Basingstoke; the Chalk rises steeply from beneath the Tertiary beds which occupy the lower ground. At the foot of the Chalk hills there are villages which send their parishes up and beyond the hill.

The Oolitic range of Lincolnshire affords an example strictly parallel with that of the Chalk escarpment.\* Lincoln Heath is a wide tract of sandy land overlying the Inferior Oolite. Sixty years ago it was nearly all waste land, but it is now one of the best tracts of arable land in the district. It runs in a due north and south direction, and is divided into two nearly equal parts by the river Witham. Nearly along the crest of the hill runs the Ermine Street. The ground falls gradually to the eastward, but on the west there is a steep-faced escarpment called the Cliffe or the Cliffe Row. This escarpment is breached by the River Witham, and at the gap stands the city of Lincoln. At the foot of the escarpment a long line of villages occurs. The parishes of these villages are long narrow slips of land, running generally into marsh land on the west, or over the pasture land of the Lias; but on the east they all mount the escarpment, most of them running right up to the Ermine Street and there abruptly ending.† Here it is plain that the settlements were determined by the outcropping of a water-yielding stratum and land fit for arable culture along the foot of the escarpment. On the west there would be wood and pasture over the lias, on the east there would be rising open land.

The Cotteswold Hills (the Inferior Oolite escarpment) were probably, like the Chalk, always in great part open land. This escarpment resembles that of the Chalk, in its relation to the parish boundaries. Villages below send their parishes up the escarpment, and sometimes over the ground beyond. But in many cases the escarpment is the boundary; this happens where the crest is very steep, and sometimes it is almost inaccessible.

The Coral Rag, in Oxfordshire, Buckinghamshire, etc., acts, as regards parishes, much as the Lower Greensand does in the Weald.

With regard to the date at which the settlements in the south-east of England occurred, there appears to be nothing

\* I have to thank my friend and former colleague, Mr. J. W. Judd, for calling my attention to this interesting case.

† Roman roads are very frequently the boundaries of parishes in the south of England. In the north of England, where parishes are large, these roads are seldom parish boundaries, but they are sometimes the boundaries of townships.

to guide us. We know that the boundaries of many of the Wealden parishes were not finally settled until the century after the Norman Conquest, when the see of Chichester was removed thence from Selsea.\* We also know that the Weald proper could not have been much occupied at the time of the compilation of Domesday Book; for although many manors are described as partly within the Weald, not many places are mentioned which are now wholly within it.† We seem to have a limit as to time in the other direction; for by far the greater number of names, even of the earliest settlements along the Chalk escarpment, are eminently English.

In speaking as I have done of the probable relative date of the various settlements and their parishes, I of course do not mean that our parishes date so far back. The date at which most of these were formed, and even whether they were originally civil or ecclesiastical divisions, are questions which are all involved in doubt, and I do not pretend that this investigation throws much light directly upon the subject. Still, I think it does give a little. If parishes or manors were ever formally planned out, it seems in the highest degree unlikely that such striking agreement with the physical features as we have seen to exist, should occur. Probably such features would be altogether ignored; or if taken into consideration would be seized upon as *boundaries*. One could scarcely desire a more striking physical feature for a boundary than the Chalk escarpment, but we have seen that it is only in rare cases that this forms the boundary of a parish; generally it is well within the parish, which stretches up to and often far beyond it. The boundaries cross the escarpment; in nine cases out of ten at right angles to it. So again with the Lower Greensand escarpment; although in its relation to the parishes it acts exactly the reverse of the

\* Dallaway's "History of Sussex," vol. i, p. 51. As good evidence of the comparatively recent date of places in the Weald, I may mention that names ending in *ford* are almost unknown, whilst there are plenty of *bridges*.

† It has been suggested, with great probability, that the Surveyors of Domesday did not pay much attention to the interior of the Weald, and therefore the fact that but few places are there mentioned is no evidence that many others did not exist. No mention is made of the Wealden Iron-works, although they existed long before and long after the Norman Conquest, and it is exceedingly unlikely that the trade would have been discontinued for a while.

It is probable that the Norman Conquest had but a small effect upon the interior of the Weald, although the great battle was fought within it. The dialects of Sussex are almost pure Saxon, and some of the small landowners claim to have had their land in possession of their own families from before the Conquest. Quite recently I had a Geological tour in the Weald with Mr. Bristow and Mr. Drew, and we were much struck at hearing a Sussex labourer speak of the Conqueror as "Duke William;" and this within sight of Senlac.

Chalk escarpment, yet they agree in rarely forming parish boundaries.\*

It will be most important to ascertain what relation the manors and other recognised land-divisions (when they materially differ from parishes in area) have to the features here described. In the Weald, at least, I believe that the results will be the same as those at which we have arrived. Manors, farms, etc., so far as one can judge, act as regards the Chalk escarpment, in the same way that the parishes do. When situated at the foot of the escarpment, they extend up its slope, and also take in some of the arable and pasture land of the Upper Greensand and Gault.

It is, however, very difficult to obtain the data necessary for working out this question fully. It is useless to attempt to generalise in such matters from a limited area; and for this reason I have taken the parishes as the basis, the boundaries of these being readily obtainable.

In Sussex the simplest parishes, or those in which the manorial and parochial boundaries most nearly coincide—whether there be one or several manors—are in those districts where we may infer the land divisions to be the oldest; whilst the more complicated parishes are in the central parts, where we infer the land divisions to be the most recent, and where we know that the parochial divisions certainly are so.†

It was long ago pointed out by Blackstone, that "it very seldom happens that a manor extends itself over more parishes than one, though there are often many manors in one parish."‡ He infers that the manorial divisions are the oldest, and that

\* Watersheds are very often boundaries in the north of England, and any remarkable stone or other natural object is also taken as a boundary mark. The lines over the moorlands are still in many places undefined, excepting by these occasional objects; but boundary stones or stone walls are now very commonly placed along them. Many years ago there were but few of these, and the boundaries were handed down by tradition. It was then the custom for each person entrusted in the matter to be taken over the ground when young, and to him was pointed out by old shepherds and others the boundary lines which they had received by tradition from their fathers. It would be his duty in after years to hand on the same traditions to the next generation. The annual custom of "beating the bounds" of the parishes in the south of England is an useless perpetuation of the same proceeding.

The areas of the various properties in the north of England were often erroneously estimated. The accurate measurements of the Ordnance Survey have proved that the moorlands belonging to a large landowner near the borders, are less by some thousands of acres than has always been supposed.

† It very often happens that parishes have detached portions lying at some distance from the main mass. The parishes along the Chalk border often have such outlying patches *within* the Weald, but it is remarkable that very few parishes within the Weald have outlying patches on the Chalk. Of the villages on Weald Clay or Hastings Beds, only two, Lynch and Chailly, have such detached portions.

‡ "Commentaries," vol. i, p. 112, of Ed. 1809.

parishes were formed from them, either by taking one manor only, as is sometimes though rarely the case, or by grouping several.

The word manor was introduced by the Normans, but the divisions of land to which it was applied must have existed at a much earlier date; indeed it is probable that but few changes took place in the recognised divisions of the land at the Conquest.

For the original unit of the land divisions we must, then, go still further back. Is it not probable that in what we consider to be the earlier settlements at least—with their arable, down, pasture, and woodland—and preserving so often their antique names, we have the sites of the original Mark?

Mr. Freeman regards the modern parish or manor as the representative of the Mark; and he looks upon the parishioners assembled in vestry as equally representing the assembly of the Markmen.\*

Tempting as this view of the subject is, this is not the place to pursue it further. I am content to have shown, as it appears to me beyond all dispute, that the land divisions of the south-east of England have a well-marked and constant relation to the great physical features; a relation which cannot possibly have been the result of accident. From this relation we may safely infer that whatever may have been the origin of manors or parishes, as such, they both depend upon older divisions of the land, which were not formed by the arbitrary act of Church or King, but resulted necessarily from the great physical features of the country.†

\* "History of the Norman Conquest," vol. i, p. 104; and "Growth of the English Constitution," 2nd ed. (1873), pp. 10 and 60. In the opening pages of the latter work, Mr. Freeman, in a passage which is remarkable even amongst his writings for its beauty and power, gives an account of the yearly meeting of the people of Uri and Appenzell to frame laws and to choose rulers. He sees in these gatherings the exact counterparts of the assemblies which, in early times, would have met for the same purpose in such districts as Holderness or Cleveland; districts in which several Marks would be included.

† In addition to the authorities already referred to, I may here mention the following, in which the Mark and its modern representative are discussed:—

E. Nasse, "On the Agricultural Community of the Middle Ages, and Inclosures of the Sixteenth Century in England" (1869). Translated by Col. H. A. Ouvry, 2nd Edition, 1872. See p. 14 especially; but the whole of the work contains most important information bearing upon this subject. Frequent references are given to English authors.

R. B. D. Morier, "The Agrarian Legislation of Prussia during the Present Century." In the Essays published by the Cobden Club on the Systems of Land Tenure in various Countries. 2nd Edition, 1870.

Sir H. S. Maine, "Village Communities in the East and West," 1871. Lectures iii.-v.

The divisions of the country are described, and their history discussed, by Mr. J. Lewis in his "Digest of the English Census of 1871" (1873), pp. 14-22.

Canon Greenwell, in the "Durham Chronicle," during Sept. 1869, printed



## DISCUSSION.

Dr. CLEMENT LE NEVE FOSTER, referring to some previous remarks by Mr. Charlesworth, said :—As Mr. Charlesworth does not seem to have fully understood the point of Mr. Topley's paper, I rise to say that I think the author made everything very clear, to some of his audience at least. The idea that I gathered from the paper just read is, that the first inhabitants of the Weald, on choosing land for their settlements, took strips of various formations to suit their various wants. They wanted a position where water could be easily obtained, so they placed their villages at the foot of the Chalk escarpment, where springs are met with. They required bread and meat for food, and fire to cook it, so each village took its slice of Chalk for pasture land, some of the Upper Greensand for arable land, and a strip of Gault for woodland. When these formations were all occupied, other settlers chose the best land they could find on the Lower Greensand, Weald Clay, and Hastings Beds.

Mr. HYDE CLARKE said that the parish divisions of themselves were relatively modern and casual, as they had been disturbed by the addition or abstraction of portions of the neighbouring lands. Nevertheless, the valuable facts laid before them by Mr. Topley could not be without reference to that important question of dispute, whether Britain was or was not bodily invaded, conquered, and occupied by the English, or whether the present state of affairs was a simple continuation of the Roman occupation. The pre-historic and the Celtic periods might be dismissed from the present consideration, as they had been disturbed by the Roman occupation. This occupation must at least have been as close as that of the early English. In the south of England the parish generally coincided with the township, and the township, from the extraordinary details recorded by Mr. Topley, probably coincided with the *mark* or *gau* of other Germanic countries, in conformity with the views of Mr. Kemble. These long narrow strips starting from the natural boundaries (without intentional compliance with geological features), or from the artificial boundaries of the Roman roads, would represent the allotments among the invading parties. The position of villages signified little, for there were many hamlets in a parish, and where the church was placed there would afterwards be the thickest population or village. Where there was a two deeds of the end of the 12th century: a Conveyance of Land and a Lease, relating to Durham. He has given an introduction and notes to each, which contain a great deal of information upon the condition of the country at that date.

The Municipal and Ecclesiastical Theories of Parishes are discussed by "An Hereditary High Churchman," in a pamphlet entitled "The Parish in History and in Church and State," reprinted from the "Church Review," 1871. This pamphlet was noticed in the "Saturday Review," and in the same periodical there was an earlier article on Local Government, both giving much information upon these subjects. Unfortunately I have mislaid these articles and cannot give the references.

On the Early Physical Condition of England, see Mr. C. H. Pearson's "History of England," vol. i, chap. i, 1867; and the same author's Historical Maps.

Roman well or settlement, that seemed to be a preferable situation for those entitled to selection. The old towns appeared to be awarded to chiefs. He thought, rather, that in most cases the churches had been placed at the *ton*, or stronghold, of the chief of the allotments. While the other homesteads were scattered, these strongholds side by side constituted lines of defence. The allotment could scarcely be, as assumed by Mr. Topley, to get a portion of each class of land for the village, because there was originally no village, and the other homesteads were scattered. It would be necessary to examine carefully the relative evidence of the Germanic allotments in the other conquered countries, and Flanders should not be omitted. Mr. Topley had referred to the opinion that the Boulonnais had been conquered from England, but he (Mr. Clarke) was inclined to suggest from the evidence of names, that while the main stream of the English and the Saxons poured from Jutland, across the North Sea, to Kent, Surrey, Middlesex, Essex, the East Angles, Lindsey and Northumbria, another stream passed by North Dutchland and Flanders, and settled in Wessex and probably Sussex. He pointed out that in Flanders there were many peculiarities of name, distribution and language. An archaeologist had mapped out the distribution of dialects, which had been better preserved there than here, and this coincided with the condition that there had been an occupation by men of various tribes, among whom the land was apportioned.

Mr. FRANKS remarked that a subject of somewhat analogous nature had lately occupied the attention of the Anthropological Society of Berlin, being a communication from Herr Meitzen, printed in the "*Zeitschrift für Ethnologie*," 1872, *Verhandlung*, p. 134, with plans of villages and peasants' lands, showing what important ethnological conclusions can be drawn from the various dispositions of boundaries.

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Mr EDWARD CHARLESWORTH exhibited two tusks of an existing African elephant, identical in form with those of the extinct mammoth.

The PRESIDENT remarked that since the tusks were said to come from Africa, they could not in any way be connected with the Mammoth. Had they, however, been Asiatic, there would have been nothing very surprising that they should present the form, more or less nearly, of the tusks usually observed in *Elephas primigenius*, which is undoubtedly at the present day represented by *El. Indicus*, if there be really any true specific distinction between them. It was impossible, he thought, to entertain the idea that the true Mammoth or hairy elephant was living down to the present day, and most certainly it would not be found in Africa.

The meeting then separated.

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MARCH 4TH, 1873.

Professor BUSK, F.R.S., *President, in the Chair.*

The minutes of the last meeting were read and confirmed.

The following members were elected: EDWARD WILLIAM COX, Esq., Serjeant-at-Law, 36, Russell Square, W.C.; CHARLES AUGUSTUS HOWELL, Esq., F.S.A.L., C.E., North End, Fulham, S.W.; PHILLIP HARDWICK, Esq., F.S.A., 21, Cavendish Square, W.; ROBERT B. HOLT, Esq. F.R.S.L., Homefield, Bromley Common, Kent.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

From the EDITOR.—Archivio per l'Antropologia e la Etnologia, vol. ii, No. 4, 1872.

From the EDITOR.—La Revue Scientifique, No. 35, 1873.

From the SOCIETY.—Actes de la Société d'Ethnographie, No. 25, 1873.

From JAMES BURNS, Esq.—Human Nature, for March 1873.

From the Executors of the late H. CHRISTY, Esq.—Reliquiæ Aquitanicæ, Part xi, February 1873.

From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From Consul T. J. HUTCHINSON.—One hundred and forty Peruvian skulls, with pottery.

From Dr. ROBERT PEEL.—Skeleton of an Australian.

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Mr. WM. TOPLEY, F.G.S., exhibited a series of stone implements which he had collected from the surface soil in various parts of England, France, and Spain.

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The following paper was read by the author:—

*On the LOOSHAIS.* By Dr. A. CAMPBELL.

HAVING served many years on the northern frontier of Bengal (*i.e.*, in Nipal, Sikim, and Bootan), where tribes and tongues are exceedingly numerous, and where the physical characteristics of the population are considerably varied, my attention was long ago directed to these peculiarities in detail, and I have helped in some degree to bring them to the notice of the public. Naturally enough, while living long and intimately with some group

of Indian frontier tribes, I have also been exceedingly interested in whatever has, from time to time, appeared in connection with other groups in other portions of that immensely extended line of border lands, stretching as they do for about 3,000 miles from Kurachee on the west north to Cashmere, thence eastwards and southwards to Sudya in Assam, and south to Singapore.

It has, therefore, occurred to me, although I have not lived among the Looshais, that a notice of this Tribe, with which we have most recently come into hostile collision, may be acceptable to you, particularly as it will be derived from the most authentic sources, and as the accounts we now have of them show them in a very different and much more favourable light than they were known to us before. Besides this it appears to me that a notice of the Looshais comes appropriately in continuation of Mr. St. John's paper on the Wild Tribes of Northern Arracan, and Major Godwin-Austen's papers on the Garrows and on the Khassias, which have been read to the Institute within the last year, and with which the Looshais are akin and intermixed.

Through these papers our knowledge of the tribes of this portion of South-Eastern India has been considerably augmented.

We have, as you see on the map, a large collection of tribes in this locality, and they are quite as much of mixed blood, as in all other parts of our northern frontier, where it is almost impossible to isolate any one tribe in physical characteristics, language, religion, or customs, so much are they intermixed and mingled with one another. Here we have the blood of Burma and the Malay peninsula from the east, the Mongolian and Thibetan characteristics from the north, and those of the aborigines of India from the west and south, to make up the local tribes above alluded to and many others.

The Looshais being described very fully by Captain Lewin in his "*Wild Races of South-east India*," it will be sufficient on this occasion to give a summary of their most marked peculiarities in social and domestic habits, to which will be added what is really new regarding them, and what could not have been known until their raids on our subjects had been so violent and frequent that the Indian government was compelled to fit out an expeditionary force to enter their country, with a view of inflicting punishment, if possible, on the raiders, and of procuring security against further murderous incursions. The immediate cause of the Looshai campaign will be in the recollection of all present. Just at the moment that our political agent, Mr. Edgar, had reported to the Bengal Government, early in 1871, that he had after months of trouble succeeded in effecting an arrangement with one of the most influential of the Looshai chiefs, by which our subjects would be secured from future attacks and

our frontier from hostile inroads, a horde of Looshais burst upon the British province of Cachar, murdered and beheaded a number of coolies employed in the tea plantations, and carried off the daughter of Mr. Winchester, one of the tea planters of the district. Hence the campaign. The "Looshais" were best known to us for a long time in India under the denomination of "Kookies," and it is even now not quite clear how far the terms are properly commutable, or should be used to designate separate tribes, or the divisions of one tribe.

They inhabit the hill tracts of Chittagong and those adjoining that British province, whence they extend north and north-east until they reach Cachar on the one hand and the frontiers of Burmah on the other. They form one of the numerous tribes generically known as the "Toungtha" as children of the hills, and thus distinguished from numerous other tribes in the same direction, generically known as the "Khyoungtha" or children of the river. The latter in their purity belong to Arracan, speak its ancient dialect, and are Buddhists; the former are a mixed race, speaking various dialects, and do not profess the Buddhist or Hindoo religion. Captain Lewin in his account published in 1870, divides the Looshais into three classes, the Howlong, Sylloo, and Rutton Poiya; but as will presently be seen, this may not be quite correct. On the accurate denomination of the Looshais, as well as on the correct terms of their division into classes, the Lieutenant-Governor of Bengal in a Minute, dated 18th May, 1871, says:—

"I have had very great difficulty in getting at the true meaning of the words Kookee and Lushai. Indeed, the only fact that can be ascertained, is that these words have no very definite meaning, but that 'Kookee' is the larger word of somewhat wide applications, while 'Lushai' is a more restricted term; all Lushais being Kookees, but not all Kookees Lushais. After much enquiry and cross-examination of all the officers who know these tracts, I am satisfied that the people whom we call Lushais, and who occupy the country above described, between Chittagong on the south, Cachar on the north, Hill Tipperah on the west, and the country which the maps may lead us to call Burmah or quasi-Burmah on the east, are in fact a homogeneous people, speaking a common language, and bound together by ties of consanguinity, and relations of marriage and murder, peace and war, and other social intercommunications. The Lushais have also relations of this kind with other Kookees living in Tipperah, Sylhet, Cachar, and Munnipore, but not to the same extent. The nature of the eastern boundary of this tract is not very clear; but this seems to me to be established, that it extends but little, if at all, east of a line drawn from the eastern boundary of Chittagong to the



western boundary of the Munnipore valley. It is established in my view, by the evidence of Mr. Edgar and others, that the people east of those of whom we have information, that is, east of the families of Vonpikal and Vonolel, are known to the Lushais as 'Pois', *i. e.*, strangers, foreigners, barbarians, a people with whom they have comparatively little intercourse. Only one family of Kookees, called Soktees, live east of this line, and they are not very nearly allied to the Lushais. Possibly there may be some natural barriers even more considerable than in the Lushai country. The hills to the east seem to be higher. Pines are said to grow on them. The belief seems to be that, speaking roughly, Kookees, including Lushais, occupy the countries draining to Chittagong and Cachar; and tribes foreign to them, the countries draining to the Irawaddy.

"Lushai-land seems to be a tract not exceeding one hundred miles in length from north to south, and say fifty, sixty, or seventy miles in breadth from east to west.

"Within that tract, among this people called Lushais, I cannot find that any real tribal subdivision exists. The chiefs hold a family rank quite above that of the common people, and they seem to be related by a not very remote affinity, as well as by marriage. The people seem to be not so much tribes as followers and subjects for the time being of particular chiefs, or of mothers and sisters of chiefs having appanages of their own.

"Clearly, among the Lushais with whom we are familiar, either on the Cachar or the Chittagong side, there are no proper tribal divisions; and it is more than doubtful whether the Howlongs and Syloos, whom we do not know, will be found to bear a tribal character.

"I find that the words 'Howlong' and 'Syloo' are sometimes used as the names of tribes, sometimes as the names of men, sometimes as the names of places; and both are marked on the map as the names of mountains, the exact height of Howlong being given."

On the above I venture to remark that this difficulty of accurately ascertaining the extent and nature of tribal divisions is not peculiar to "Looshai-land", but general, I believe, all along our Indian frontiers. What is a "race", what a "tribe", what a "clan", in Indian ethnology? We greatly want a common understanding on the use of these terms. One section of the population of Nipal, the Limboos, is divided into more than fifty tribes or clans, some of them named after valleys, hills, rivers, etc., so that the Howlong mountain, after all, may have led to that tribal distinction of the "Looshais".

The Looshais are fairer in complexion than the people of the plains; their features resemble the Malays more than the Tartar-

faced people of Munnipore, and their voices are described by Captain Pemberton as remarkable for extreme softness, and their language for euphonic sweetness, compared with the harsh and guttural dialects of the Tartar races to the north of them. They dry and preserve their dead; they have no distinctions of caste, all eat and drink together, marriage is a civil contract, dissoluble at the will of the parties concerned, and there is no prohibition against the marriage of widows; the intercourse between the unmarried of both sexes is unchecked, but not so after marriage. The men are generally beardless, but not invariably so, and live by hunting and marauding, while the cultivation, all household work, carrying of loads, etc., is done by the women. They live in log houses on the ridges of hills, and know enough of iron working to make spear heads and fish hooks—nothing more.

Hitherto the Looshais have been known to us only as a savage and murderous race. It is a century (time of Warren Hastings, 1770), since they were so denounced; and under the name of "Kookies" they have every now and then appeared in the records of the Bengal Government, maintaining that character on each successive inroad on our frontier. It is only on the last occasion of our proceedings against them in armed force, that we have seen enough of their organization and habits to judge them more leniently.

The following Extract Report from Brigadier General Brownlow, C.B., commanding Chittagong column of Looshai Expedition, dated 29th January, 1872, is very interesting in this respect. He says:—

"It may not be out of place here to remark that the Looshais or Kookies, for the former term, properly speaking, applies only to the family from which the chiefs of the so-called tribes are descended, appear to me, in spite of their misdeeds, very far removed from the savages they are supposed to be. They live in comfortable houses, in high and healthy ranges. Their mode of cultivation yields the most abundant and certain crops. They are surrounded by pigs and poultry, goats and gyal (a domesticated bison). They fish and shoot, and brew both beer and whiskey. Their domestic and tribal arrangements appear most happy, and altogether their condition contrasts very favourably with that of many of our subject races, so much so, that I am not surprised to hear the majority of the captives, whom they treat as their own people, would look upon a return to civilization as a doubtful boon. The men are of middle height, well limbed and fair, with the Indo-Chinese type of face. Most of those who have hitherto fought against us are armed with flint muskets; but I imagine a spear or javelin, and the universal

dão, are the more common weapons. We have seen no others."

Nor is this Extract Letter from Brigadier-General Bouchier, C.B., commanding Cachar column of Looshai Expedition, dated 20th February, 1872, less so. He writes :—

"On the arrival of the head of the column, a strange scene was enacted, paying a flattering tribute to the reputation of the force, whose character for discipline and good conduct must have preceded it. Men, women and children, old and young, flocked out to meet us. There was little or no fear amongst them ; we were surrounded on all sides ; watches, telescopes, everything was greedily examined ; but what was most strange here and at other places, nothing but turning up our coat and shirt sleeves, and allowing them to feel our arms and faces, could make them believe our white skins were real. The women especially were very clean and good-looking, their hair tastefully arranged in coronets over their heads ; they seemed very happy and cheerful. One old man, who said his age was a hundred, knelt at my feet, placed his head on the ground, offered me his blanket, and said all they had was at my service. We afterwards heard that they said we were gods. Mr. Edgar produced a necklace, which I put on his neck. They were evidently delighted with our visit and its happy termination."

Still more pleasant is it to read this extract from "Notes on the Looshais," by Mr. Burland, a tea-planter, who accompanied Mr. Edgar, one of the British political agents with the expedition. He says :—

"With American Indians and many other similar wild races, hunting and war are considered to be the only occupations suitable for men to follow, and consequently they have no instinct for trade, and to them trade is simply degrading. The Looshai, on the contrary, while occasionally indulging in hunting or war, has, for a wild man, a most extraordinary aptitude for trading, and, I am certain, will, with fair opportunities, in a short time be on a level with the Munniporree as a trader, or even with the Bengalee. Taking into consideration the past and present condition of these tribes, having been so long living in a state of perfect isolation, their intelligence is something wonderful ; as also their desire to obtain information, most especially in mechanical contrivances. I was of opinion when at Changsil, and am still of the same, that artizans should accompany the officer who visits these people, and that any Looshai who wished to learn any trade should be taught. They are intelligent, industrious, and good-tempered, and from all I saw of them, I believe them to be kind and affectionate in their dispositions when in their own country and pursuing their usual peaceful avocations. When on the war-path, they are neither better nor worse than other

men, civilised or uncivilised. Greater atrocities have been committed by people who are called civilised, when at war, than have ever been recorded against Looshais."

Major Macdonald, who was in charge of the survey party which started from Chittagong with the right column of the Looshai expedition, gives the following graphic account of the Kookas:—

"The Kookas have every reason to be contented with their lot; they raise abundant crops of rice, cotton, melons, gourds, pumpkins, beans, vetches, maize, chillies, and sweet potatoes, with a minimum of labour. 'Joom' cultivation has been so often described that I will not repeat it; apparently all the aboriginals of India joom. The Gonds of Central India not only cut down the jungle, but they dig out the roots of the trees. Joom cultivation requires frequent change of place: very steep hill slopes would be denuded of soil if exposed for more than two years. The jungle is then allowed to grow up again, and until the soil is firmly bound by the new roots, it is not prudent to strip the hill-side of shelter, and again prepare it for crops. The complete denudation of hill-tops at the sites of villages shows how little soil there is. Its fertility is something wonderful. I have counted three hundred and sixty-three and three hundred and eighty-seven grains in a single head of rice, and the same soil produced gourds, vetches, and chillies in the same crop. The cotton bolls are immense, bearing very fine thread with short staple. The Kooka cotton fabric is unrivalled for strength and durability; their basket work is as beautiful as it is strong. Mr. Barratt writes regarding the approach of the Kooka system to the European ideal of communism, and remarks very justly on the similarity in their community of land, their obligation to labour, their distribution of proceeds. Such people are not savages, though they may retain some cruel customs. The Kooka shows Chinese descent; his animals, such as pigs and dogs, are unmistakably of Chinese origin; like the Chinese, they eat dog's flesh; nothing comes amiss to a Kooka—he eats everything that flies, runs, crawls, or creeps, as well as the grub in its ante-natal tomb. The Kooka is pious also; before he eats his fowl or pig, he never fails to kill it before his god, which in Kookaland takes the appearance of a stool four inches square, surrounded by a small fence hung with cotton-wool dyed in bright colours. Kookas, male and female, of all ages, smoke perpetually; the women inhale the smoke through water, which retains the essential oil, and is then bottled off for consumption by men, who hand it round much as snuff-takers would offer their boxes; it is presented, too, as a sign of cordiality to strangers. Kooka

houses are built on raised piles; the family live above, and the pigs below—the latter scavenge. It is an economical system amongst dirty people who wish to be clean without trouble. The people of the hill tribes are very sociable, that is to say, they will eat or drink with us, and have no prejudices. It is to be hoped that contact with us will not degrade the Howlongs into Chukmahs or Tipperahs. The strongest bond of sympathy an Englishman can establish is through sport, for which there is a great field in the upper basin of the Sahjuck, and in the valleys east and south-east of Uiphum.

"Their jungles produce turmeric, yams, ginger, cinnamon, and cardamoms. They are well sheltered, well clothed, sleeping softly on thick cotton counterpanes, and well fed. They have amusements and sports in their forests; their rivers abound with fish. They are far more civilised than any of the aboriginal races of India, such as the Bheels, Gonds, Kols, and Sonthalees. Their domestic polity is a kind of communism under a species of despotism, the rule of their hereditary chief. I believe no happier people are to be found in the world; if savage, they are free from the craft of usurers, as well as the persecution of the police and the love of the law's protection."

All these accounts of our new allies are very satisfactory, and we may now reasonably hope for far better days in their vicinity. Seeing as they now do the rapid progress of tea planting in Cachar and Chittagong, they may be induced to adopt its cultivation in their own hills, and also to join the industrious coolie bands from other districts, in seeking honest labour, instead of being, as heretofore a source of terror to our border subjects, and of anxiety to our Government.

#### DISCUSSION.

Sir DUNCAN GIBB said he had been much interested in listening to the author's clear and graphic account of the Looshais, but he would like to know the descent of those people and whence their origin; and his reason for asking this was the account given by Dr. Campbell of their voices, which he described as soft and plaintive, and not harsh and guttural like the Tartar tribes further north. Some years ago he (Sir Duncan Gibb) was engaged in some researches upon the voice in the various nations of the world, and as it was wholly new and untrodden ground, he had a great deal of difficulty in obtaining information, for so few travellers speak of the voice as a rule. Yet he succeeded in getting together the materials of a paper, partly through personal investigation himself amongst foreigners, in the Home for Asiatics at Poplar, and in other places, as well as through friends who had been in various parts of the globe, besides a few remarks and hints from the writings of some travellers. The result of it was a



paper on the "Character of the Voice in the various nations of Asia and Africa, contrasted with those of Europe", read before the Anthropological Society, and published in vol. iii of their memoirs. In that memoir the voices of the Indian races were considered, and that described by Dr. Campbell accords in some respects with what he had himself given, but he would like to be sure of their descent. In the same paper he announced many new facts, and showed that the Tartars, for the reasons therein given, had the most powerful voices in the world, and next to them came the Germans, who had the strongest and most powerful amongst European nations. The voice of the Looshais showed them to be a docile and comparatively quiet people, notwithstanding the recent troubles existing among them.

The author exhibited a series of thirty drawings, lent by Mr. Brian Hodgson, in illustration of his paper.

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The author then read the following:

STONE IMPLEMENTS and FRAGMENTS of POTTERY from CANADA.  
By Sir DUNCAN GIBB, Bart., M.A., M.D., LL.D., F.G.S.

[With two plates].

IN various parts of the Dominion of Canada stone implements of different kinds have been discovered from time to time, which are preserved in many of the local museums, possessing not only considerable variety in their form and supposed uses, but at the same time indicating various degrees of antiquity. With these are not unfrequently found examples of pottery of a very primitive form, marked by patterns described as herring-bone, basket, corn-ear, etc.

The most recent of these stone implements are thick gouges, chisels, hammers, hatchets, and various utensils, for we find them in use among the Indians down almost to the present time. Arrow-heads and spear-heads are unquestionably more ancient, for we do not find them in what are presumed to be recent sepultures, or in association with the thick stone gouges and chisels already mentioned. They are, moreover, mostly found on the surface of ploughed land or fields composed of gravel or other soils, and marking, in all probability, the site of some engagement or battle-field between different tribes of the aborigines.

The specimens now exhibited are from various parts of Canada, at extreme distances in some instances, and are of different varieties of stone. The collection consists of some sixteen arrow-heads, two flat spears, two hatchets, rather different to what are usually met with, and some portions of pottery, which shall be briefly described in detail.

The spear-heads are respectively  $6\frac{1}{2}$  inches long by  $2\frac{1}{4}$  inches

wide, and  $4\frac{1}{4}$  inches long by 2 inches wide; the shorter specimen has evidently been broken off at its lower end, and both are without their tangs, that is to say if they ever possessed any; they are composed of fawn-coloured chert, are thin and irregularly flat throughout, being not more than a quarter of an inch thick at their thickest part; the larger weighs 3 ozs. less 30 grains, the smaller  $1\frac{1}{2}$  oz. and 40 grains. They were found in the Saguenaye district, below Quebec, and are of considerable antiquity.

The two hatchets are wedge-shaped, and composed of a dark green micaceous schist, their surfaces being smooth as if polished. The larger implement is  $3\frac{3}{8}$  inches long,  $1\frac{1}{8}$  inch wide at its narrowest and  $2\frac{1}{8}$  inches wide at its broadest part, and  $\frac{3}{4}$  of an inch thick. The smaller implement is  $3\frac{1}{2}$  inches long,  $1\frac{1}{8}$  inches wide at its narrowest and  $1\frac{3}{8}$  inches at its broadest part, and  $\frac{5}{8}$  of an inch thick; it is not so well shaped as the other, and has a piece chipped off one of its surfaces. They weigh respectively  $7\frac{1}{4}$  and 4 ounces, and the smaller specimen is represented in figs. 1 and 2. They were found at Niagara on the Canada side, close to the Falls, where I procured them on the occasion of my last visit there in 1853.

The stone arrow-heads present some variety in their size, form, and material, as may be observed in the drawings. The smallest is  $\frac{7}{8}$  of an inch long, and the largest  $3\frac{1}{8}$  inches; but I possessed a longer and larger than any of these, that measured about  $3\frac{1}{4}$  inches, that was stolen from my collection in 1859, when I exhibited it before one of the London Societies. I had never seen a finer arrow in any of the Canadian collections that I examined. Of the arrow-heads, the shape is either long and narrow, tapering to a point, or terminating somewhat in a rounded end, being rather broad than tapering; indeed one of them resembles a small celt in shape (see fig. 4.) In weight they range from 16, 31 and 44 grains up to 340 grains or close upon  $\frac{3}{4}$  of an ounce, which may be considered a good deal for an arrow-head; but my largest one that was filched from me must have weighed an ounce. Their thickness varies somewhat, one example that is rounded, broad, and flat is  $\frac{1}{10}$ ths of an inch, not more indeed than two of the smallest. A small arrow of dark red slate is  $\frac{1}{2}$  of an inch thick, whilst the others run from  $\frac{1}{4}$  to very nearly  $\frac{1}{2}$  an inch; but of this latter only one approaches it. The tang or stem of the arrow varies in shape and length, as is well shown in the drawings, the longest being  $\frac{5}{8}$  of an inch; the celt or leaf-shaped arrow-head seems to have no tang, as there is no indication of one having existed. Of the sixteen arrows, six were found on the island of Montreal, generally on the surface of ploughed land (figs. 7, 8, 9 and 10); two are from the Saguenaye

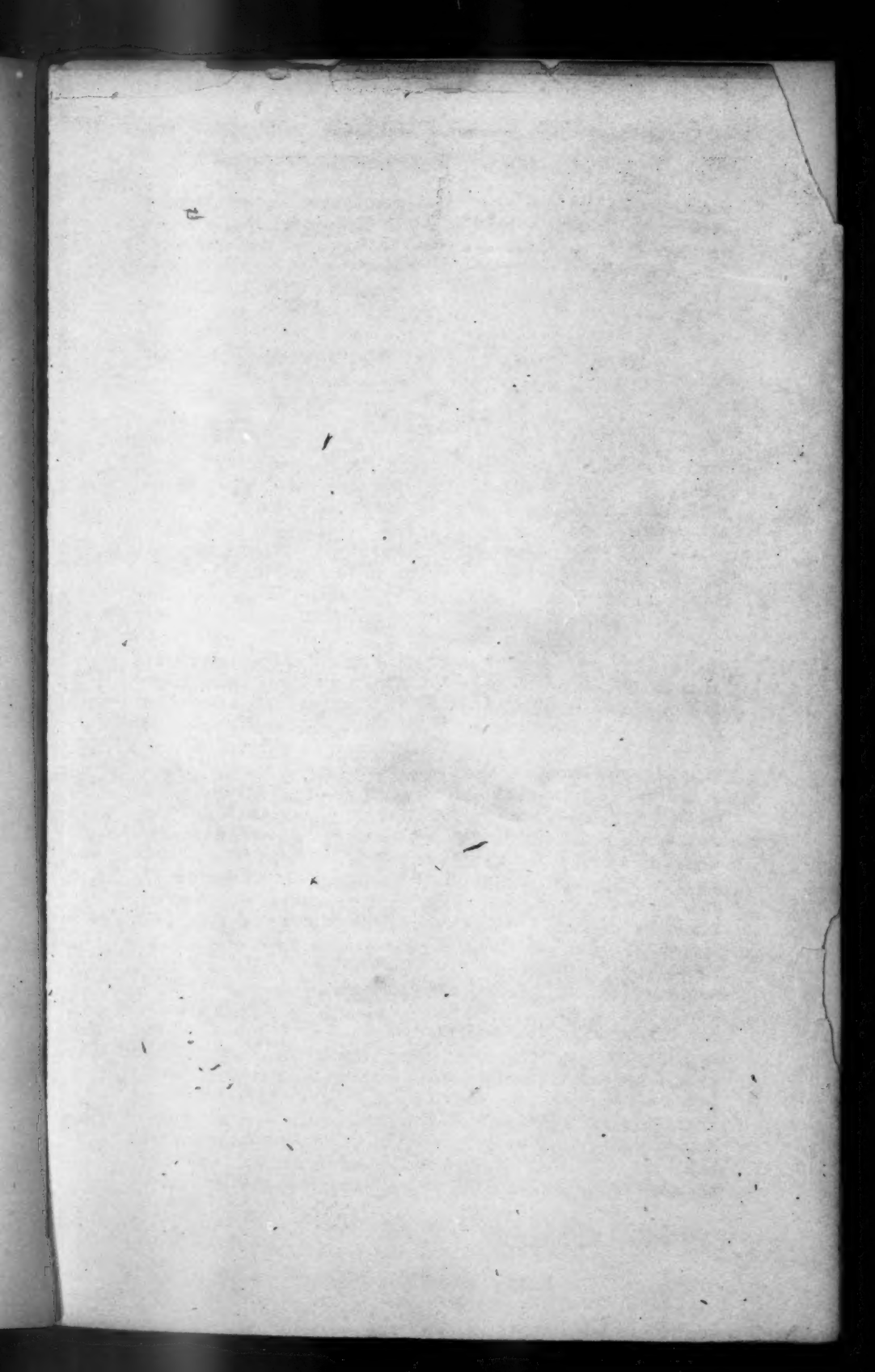


Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.



Kell Bros. Lith. London.

Fig. 6.



Fig. 7.



Fig. 8.



Fig. 11.

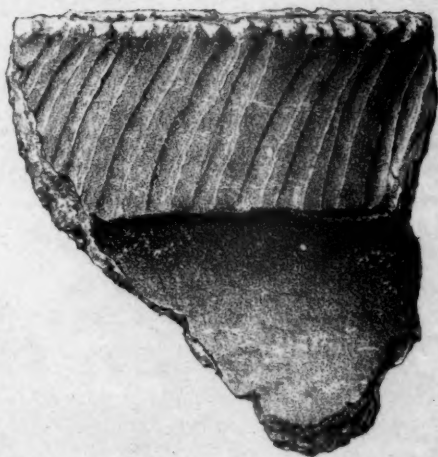


Fig. 12.

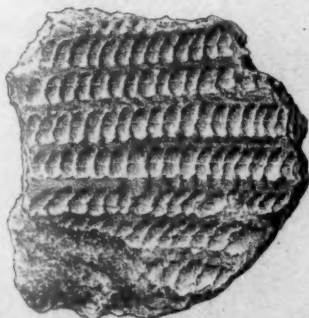


Fig. 9.

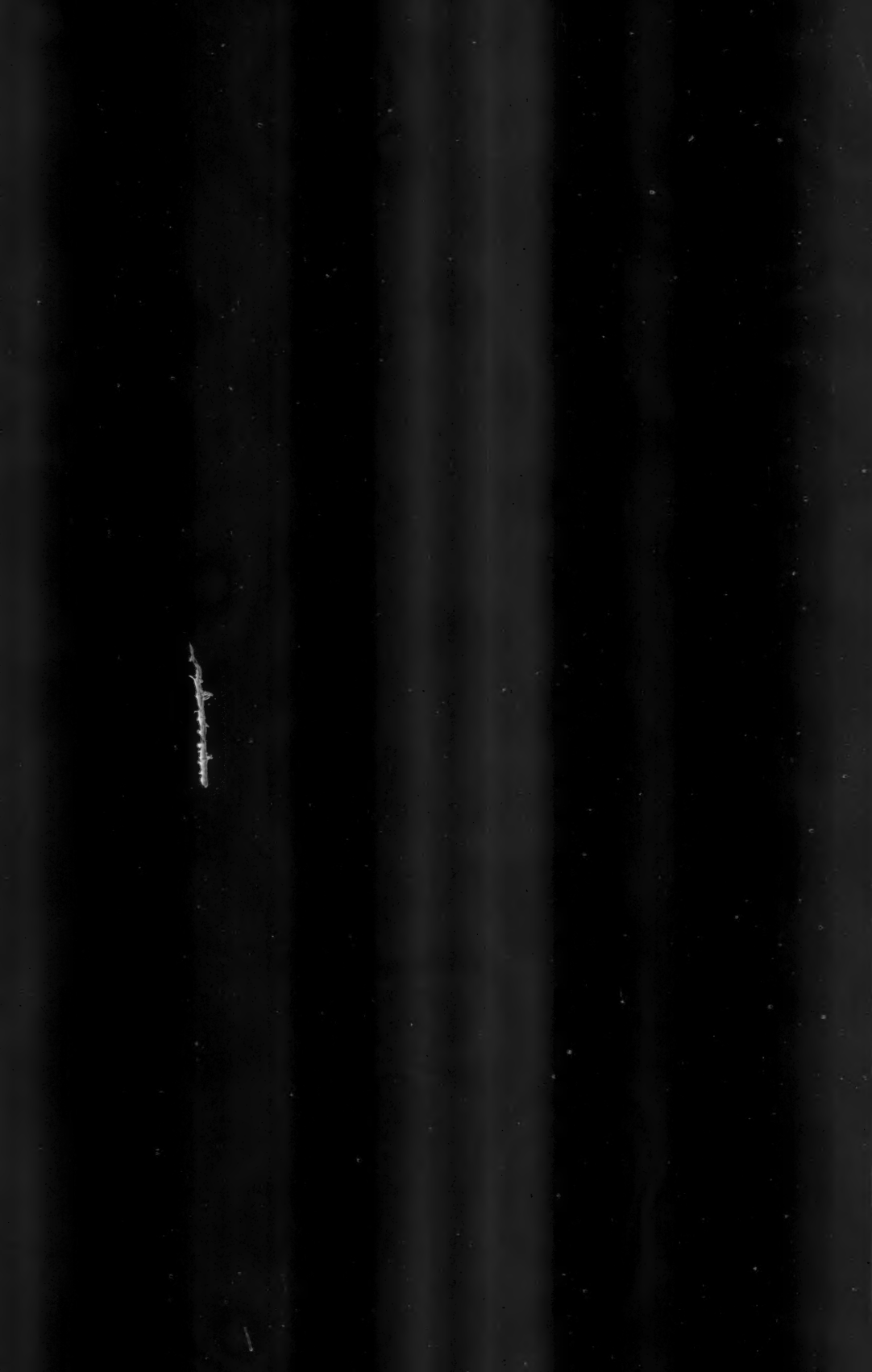


Fig. 10.



Kell Bros. Ltd. London





(4 and 5); one from Pointe du Chênes, near Grenville, on the Ottawa River (3); one from Chippewa, near Niagara; four from Niagara; one from William Henry; and one from Quebec (6).

The greater number of these arrows are composed of chert, one is of red slate, another of opaque white quartz, and one is much weathered, of a reddish brown colour, probably from the nature of the stone. On the whole they differ in form from the arrows that have been found in the British islands, especially in the shape of the stems, and the general form of the arrow-head itself; but I think they present a fair illustration of ancient Indian arrows that are found over various parts of Canada. No flakes have been discovered in association with them, because they have been picked up as solitary specimens here and there; yet I have no doubt that both chips and flakes may be encountered some day in abundance, when a spot is discovered on which the arrows have been manufactured. A large number of arrow-heads have been found in the vicinity of Chippewa, close to Niagara, and I infer that it marks the site of some ancient Indian battle-field, and no flakes or chips were found associated with them.

The discovery of Canadian pottery is by no means of common occurrence; any fragments, therefore, must be considered of value, and three of these are included in the collection. The smallest is nearly 2 inches square, and is covered on one side with a ribbed pattern formed by a series of notches (fig. 12), the ribs being a quarter of an inch apart; this fragment is imperfectly baked, and was picked up on the northern shores of Lake Erie, and minute particles of mica can be distinguished in it with the naked eye. The largest portion of pottery is a fragment of what evidently must have been a large vessel, and consists of a portion of the upper part with the rim  $2\frac{1}{2}$  inches wide, the outer side of which has a well-defined marking, but somewhat irregular and more fanciful; the vessel to which it belonged must not only have been large, but tolerably thick and solid, for the fragment is  $\frac{3}{8}$  of an inch thick; it has a preponderance of clay in its composition, and is lightly baked. The third fragment is a portion of a more highly finished and better baked work than the other two, and is triangular in form, the larger end consisting of a part of the rim of the vessel, with well-defined hollow lines an inch long, running vertically from dots or little round holes as shown in the drawing (fig. 11). It is firmer and more solid than the other two examples, and minute specks of quartz and mica can be readily seen in its structure. The patterns vary from what I have seen figured among Canadian specimens, and perhaps for the present are unique, although I learn

there are fragments in the Blackmore collection, Salisbury, found in the County of Brant, Canada, not unlike them. The two last described fragments were found on the Island of Montreal.

Small as the collection is, it took me many years to obtain it, which leads to the inference that such objects are scarce; yet many examples may be in the possession of private individuals living in the localities where they have been found. But in the course of my experience and knowledge of that country, I can state with certainty that nothing has yet been found in the gravels of Canada corresponding to the flint implements from the drift beds of England and France, so that the conclusion is a fair and reasonable one, that however old the arrow-heads and other objects may be which are now exhibited, their manufacturers existed in recent times, as compared with those of the drift period. Nevertheless I considered my specimens of sufficient interest to bring before the Institute, as helping at the same time to draw attention to the subject in the Dominion of Canada.

It would be purely speculative to estimate the age of these arrow and spear-heads; but looking upon them as the most ancient stone implements that are found in Canada, if not in America, I would be disposed to place the period of their use and manufacture at about two hundred years before the Christian era, corresponding indeed to the time when our forefathers in the British Isles may have used such things, either as weapons or as objects of the chase, and I do not think that such an age can be considered in any way remote or extravagant.

#### DISCUSSION.

Mr. FRANKS said with regard to the fact that stone axes and gouges are not found associated with spear-heads and arrow-heads, it must be remembered that this is not surprising, as the former would be found near the dwellings of the ancient inhabitants, the latter on hunting grounds, forests, or fields of battle. The only spots where we might expect to find them associated, are in ancient graves, or in localities where the manufacture of stone implements had been carried on; but even here the difference in the material of the two classes of implements would render it probable that they would be manufactured at different places. As to any proof of great antiquity for the chipped spear-heads and arrow-heads, it must be remembered that such weapons were in general use in North America until a comparatively late time, and that arrow-heads of stone are still used by the Indians of California, and the Esquimaux. In the mounds of the Ohio, which are generally received as being of great antiquity, arrow-heads are not frequently found, the weapons then in use having apparently been large and broad lance heads. See Squier and Davis' "Ancient Monuments of the Mississippi Valley", p. 212.

Sir DUNCAN GIBB in reply, said the reason of his belief in the antiquity of the arrow and spear-heads, over the well known and more modern stone implements, is that they are never found in Indian graves, whereas the others are commonly so. Then again, they are discovered in districts of country, after the forests have been cut down and cleared away, and this only during the tilling of the soil, rather pointing to the fact that their existence preceded the growth of the forests in some instances at any rate, although he would not deny that the arrows were used for the purpose of killing game. Yet it is the most primitive and certainly the most ancient of the stone weapons in all parts of the world. From the great number of these arrow-heads found from time to time at Chippewa, close to Niagara, in what is clear ground and probably for ages free from forest, it is evident there must have been a severe engagement at one time there between some rival tribes, and as no flakes of any kind have been met with there, it was evidently not a place where arrow-heads were manufactured. Although two thousand years are nothing in point of antiquity, for these arrow and spear heads, he thought we were justified in speaking of their use four thousand years ago, a time when the continent of America was assuredly traversed by aborigines, no matter from what quarter they came. Concerning the pottery, he would remark that as a rule it was scarce and only occasionally found, and generally very primitive in form and ornamentation; the period of its manufacture was probably not very remote. In reply to the question put to him about the existence of animal remains in the caverns of Canada, which he had brought before the scientific world in 1859, at the meeting of the British Association at Aberdeen, he would say that in one only were animal remains found, and that was in Colquhoun's Cavern, in the County of Lanark, Canada. They were the bones of a large deer, and were collected and sent home to Dr. Buckland for examination, and although they reached him safe, his numerous occupations prevented him from doing so, and no account was ever published of them. He (Sir Duncan Gibb) had made efforts to find out these bones at Oxford, but without success, and they were therefore lost to science. He believed that in the Mona and Eramosa caverns, a great series in the Niagara limestones extending from West Flamborough, at the western part of Lake Ontario, northwards to Georgian Bay, when thoroughly investigated, animal remains might be found; and indeed in a cavern on the Island of Montreal called Gibb's cavern after him, a floor of stalagmite was discovered, which had not as yet been properly examined.

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The Director read the following paper:

*On VENTNOR FLINTS.* By H. M. WESTROPP.

At one of the late meetings of the Anthropological Institute, Mr. Avery threw out a challenge to prehistoric archaeologists; he said that flints like those styled flakes and arrow-heads, and

which have been assigned to a prehistoric age, can be found in numberless quantities on the hills behind Ventnor. He expressed doubts whether some of the flints exhibited at the meeting were the work of man, or were not, rather, natural and accidental. On the hill behind Ventnor, he said, a visitor would easily find any number of flints of similar appearance, which were obviously of natural origin.

I have, myself, found several flints on the hill behind Ventnor, bearing a kind of resemblance to flint implements; but I have searched in vain for one with the bulb of percussion, and chipped at the edges, which are the true tests of human workmanship, and of the flint flakes of prehistoric times. All those found on the hill behind Ventnor present a natural fracture, and therefore are totally wanting in the true characteristics of the genuine implement—the bulb of percussion and the chipped edge—and thus can have nothing in common with the genuine flake or arrow-head of human manufacture, and of prehistoric times. Mere likeness does not prove the thing to be what it resembles.

With this note, I send some flints from Ventnor, which exhibit a resemblance to flakes and arrow-heads, but which are totally wanting in the true characteristics of the genuine flint flake.

Mr. Evans, in his admirable work on the "Ancient Flint Implements," lately published, has noticed some of the distinctive marks by which artificially formed flakes may be distinguished from mere splinters of natural origin. He shows that a flake which exhibits a bulb of percussion and the edges chipped or faulty, presents features which are almost as good a warrant for the human origin of the flake, as would be the maker's name upon it.

#### DISCUSSION.

Mr. John Evans said that he had searched for worked flints on the hills behind Ventnor, and found the surface covered with angular flints of natural formation. The only worked flint which he found was a core from which flakes had been detached.

Mr. AVERY and Colonel Fox joined in the discussion.

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The President announced that further Committees had been appointed, viz., for Physical Characters of Mankind, for Priscan Archæology, and for Descriptive Ethnography.

The meeting then separated.

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MARCH 18TH, 1873.

Professor BUSK, F.R.S., *President, in the Chair.*

THE Minutes of the last Meeting were read and confirmed.

The Viscount AMBERLEY, 30, Weymouth Street, Ravenscroft, Chepstow; and LORD ARTHUR RUSSELL, M.P., 10, South Audley Street, W., were elected members.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

FOR THE LIBRARY.

From the EDITOR.—The Food Journal, for March, 1873.

From the ASSOCIATION.—Annual Report of the Geologists' Association for 1872.

From the AUTHOR.—Philosophical Grammar of Arabic; A Lecture on the Races of Turkey; The Theory and Practice of Education in India; A Sketch of the History and Literature of Moham-medanism, part 1; Results of a Tour in Dardistan, Kashmir, Little Tibet, Ladak, Zanskar, etc., vol. i, parts 1, 2, and 3. By Dr. G. W. Leitner.

From the EDITOR.—Cosmos: an Italian Geographical Magazine, No. 1, 1873.

From the EDITOR.—La Revue Scientifique, Nos. 36 and 37, 1873.

From the SOCIETY.—Sitzungsberichte der Physicalisch-medicinischen Societät zu Erlangen, heft 4.

From the SOCIETY.—Proceedings of the Society of Antiquaries of London, vol. 5, No. 5.

From the SOCIETY.—Journal of the Asiatic Society of Bengal, part 1, No. 2; part 2, No. 3.

From the SOCIETY.—Proceedings of the Royal Society, vol. xxi, No. 142.

From the EDITOR.—Zeitschrift für Ethnologie, Viert. Jahr., heft vi, 1872.

From the SOCIETY.—Bulletin de la Société Imperiale des Naturalistes de Moscou, No. 3, 1872.

From the AUTHOR.—Etudes sur la Constitution des Vertèbres caudales chez les primates sans queue; Les Selections (Darwin et Wallace). By Dr. Paul Broca.

From the EDITOR.—The Spiritualist, for March 1st and 15th, 1873.

From the AUTHOR.—Le Nascite per Mesi degli Uomini Illustri Ricerche. By Prof. Paolo Mantegazza.

From the EDITOR.—Nature (to date).

FOR THE MUSEUM.

From Consul T. J. HUTCHINSON.—140 Peruvian Skulls, with Pottery.

From Dr. ROBERT PEEL.—Skeleton of an Australian.

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The following paper was read by the Author.

*The CONCURRENT CONTEMPORANEOUS PROGRESS of RENOVATION and WASTE in ANIMATED FRAMES, and the EXTENT to which SUCH OPERATIONS are CONTROLLABLE by ARTIFICIAL MEANS.*  
By GEORGE HARRIS, F.S.A.

[SHORT ABSTRACT].

THE author quoted the opinions of several physiologists on the subject, ancient as well as modern, and referred to the peculiar agencies which, in their opinion, operate to produce both renovation and waste. As these causes are more or less controllable by artificial means, he suggested that a more extended knowledge of the principles of pathology and chemistry would bring them more entirely under our direction. He referred to the peculiar mode in which these powers acted, and recommended experiment in various ways to bring the matter to a successful issue.

DISCUSSION.

Mr. CHARLESWORTH made a few observations, after which

The PRESIDENT remarked that as the point of view from which the author of the paper regarded his subject was entirely different from that in which it would be regarded by any physiologist and pathologist of the present day, he felt it difficult to enter upon any discussion upon its contents. The meaning apparently attached to the terms "waste" and "renovation," as exemplified, for instance, in the case of the rusting of iron, and the so-called "corruption of water"; and in the action of certain poisons, or in fact generally, as applied to living organisms, appeared to him so vague and unusual, that he found it impossible exactly to comprehend the author's real meaning. The author's recommendation of the assiduous study of physiology and chemistry, and his saying that were our knowledge in these two branches of science greater than it is, we should in all probability have more control over the actions of the living organism, are propositions from which no one can dissent; but as regards the recommendation, it seems hardly needed, seeing that no branches of science are at present pursued with more zeal and success than are physiology and chemistry. What the author means by "checking waste," with a view of prolonging life, is not very obvious. As life consists simply in the manifestation of the forces liberated on the passing of matter from a state of unstable to one of stable equilibrium, it would seem that the more rapid the "waste," the greater would be the manifestation of vital activity, so long as new material was simultaneously and continually supplied; and that should we succeed perfectly in "checking waste," our efforts would necessarily be fatal, or stopping short of that, would result in the production of a condition like that of hybernation.

Mr. G. HARRIS said, in reply to the remarks that had been made upon his paper, in the first place, the question proposed was not, as

stated by Mr. Charlesworth, "how to prolong life", but "whether there are any artificial means by which it can be prolonged." He (Mr. Harris) had submitted two questions for solution. I. Whether the possibility exists of preventing waste, and so prolonging life by artificial means. II. Whether, although this possibility exists, we are prevented from attaining this end, by the present imperfect state of pathological and chemical science. He had then cited a number of opinions of very eminent authorities on the subject, in order to enable them to arrive at a conclusion. Some misapprehension, nevertheless, appeared to exist as to the mode in which he had treated the subject, and credit seemed to be given to him for advancing views and opinions which were his own, but for each of which he had cited his authority, and referred to it in the margin of his paper; and which, however they might be censured, were those of some of the greatest men who had ever adorned the world of science. All that he (Mr. Harris) had ventured to do, was to make certain suggestions for their consideration. The president said that he (Mr. Harris) had misapprehended the meaning of the term waste, which only amounted to a change in the particles of the particular compound subject, and instanced the case of the consumption of coal by burning. His (Mr. Harris's) meaning appeared however to have been misconceived, as a reference to his paper would prove that he had stated in regard to the vulgar notion respecting the destruction of material objects, that all that occurred was a change in the relation of their particles; and he had even specially instanced the case of consumption by fire. As regards Hunter's imperfect definition of life, to which the chairman alluded, this had been criticised by Coleridge also, who said that Hunter had an accurate conception of it, but that he wanted expressions to convey his meaning. With respect to what he (Mr. Harris) had said about the extraordinary longevity of certain wild animals, this was a notion which had been entertained by many of the old writers on natural history, as also by some modern authorities. The subject of the paper before them was one on which it appeared impossible to arrive at a satisfactory conclusion to which all would agree; but he (Mr. Harris), was gratified that his paper had produced so animated a discussion.

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The Author read the following paper :

THEORIES *regarding* INTELLECT and INSTINCT; *with an* ATTEMPT to DEDUCE a SATISFACTORY CONCLUSION *therefrom.* By GEORGE HARRIS, F.S.A.

I PROPOSE here to investigate together two subjects which, however essentially different one from the other, are closely connected together; and although entirely opposite in their nature, are nevertheless calculated each to throw considerable and important

light on the other. Indeed, this very contrariety between them contributes materially to illustrate their various characters.

The entire subject has commanded the attention of the acutest and of the most comprehensive intellects, and the result of their researches it is my intention here to recount, and then to attempt to effect a fair and reasonable deduction from the theories that have been advanced.

As regards instinct more especially, there is probably no subject whatever of deep scientific interest to which the attention of so many men of extensive capacities and profound acquirements has been called. And yet no one complete positive or definite theory regarding it has been established. As early as Aristotle the enquiry began, and so late an authority as Lord Brougham devoted a volume to this topic. On most matters science has advanced with rapid strides. Here, however, it appears to be completely at a stand-still, though certainly from no neglect of effort to progress. The conquests of science have been well nigh universal. In this one region of enquiry it has been completely baffled. And, indeed (more especially as regards some modern speculations), the more closely and carefully the subject is investigated, the more perplexing does it appear. Fresh discoveries here seem merely to involve us in fresh difficulties; and the only result of any new speculation is to overturn theories hitherto regarded as sound and well grounded. Whenever we attempt to run forward, instead of gaining ground in our march, we find that we have rushed into a quagmire, and there lie struggling with less hope than ever of reaching the end of the journey.

Nevertheless, notwithstanding all this, the very perplexity of the subject gives an interest to its investigation. Its towering acclivities and frightful precipices invite daring spirits to scale its perilous heights, by whom the ordinary level is contemned. Moreover, the consideration of the great minds, the giant intellects, who have devoted their attention to this grand topic, proclaims it to be at any rate worthy of investigation by a scientific association. I am not so presumptuous as to hope to effect any triumph where many others of such superior acquirements have been so signally baffled. But it has occurred to me that a recapitulation of their united efforts may be of important service in the farther prosecution of the enquiry, and that the present occasion affords a favourable opportunity for making such an attempt. I have therefore here given a summary sketch of the opinions of the leading philosophers and writers on the subject:—men whose sentiments on any topic must always command attention, however widely in these opinions they may differ one from another, and we may differ as widely from them.

There is yet, however, one other authority to be appealed to,

which, although greater than any of them, and than all of them together, has not always commanded the respect and attention to which it is entitled. In many cases indeed, it has not been consulted at all; and in some of the few cases where it has (as ordinarily happens where ladies take the advice of gentlemen), a course is followed exactly opposite to that in which we were directed. That high, though despised authority to which I allude, is nature herself, the investigation of whose operations and whose contrivances, alone can lead to a satisfactory conclusion here. The opinions of the learned are nevertheless not to be disregarded, although not in the place of, but only as supplementary to the teaching of nature. Their sentiments may serve us as guide-posts to direct us in studying nature, or they may be rendered more useful still, as beacons to warn us against the errors into which so many, and even themselves, have occasionally fallen.

The greatest of these philosophers, Lord Bacon, in all his researches attentively followed nature, and was the greatest because he did so. In the investigation of the subject before us, nature should be studied, not merely closely and accurately, but comprehensively also. The nature of man and the nature of animals should not only both be studied, but both of them compared one with the other. And not only the constitution of both, alike material and spiritual, but the habits also.

Aristotle's "*History of Animals*"\* contains some interesting remarks on the habits of animals. He here treats of all the varieties of animals, and of the structure and parts of each. The knowledge displayed is truly wonderful, and his observation was very extensive.

This philosopher held that perception differs from intellect, the former being common to all animals, the latter to a few. The powers of imagination and memory he considered to originate in the senses, and to be common to many animals as well as man. He, however, supposed that animals have not reminiscence, although they have memory, inasmuch as the exercise of reminiscence requires intellect. Animals, he says, have sensitive phantasy or imagination only; rational creatures alone possess the power of deliberating and comparing ideas.

The opinion that animals possess a spiritual being, which exists after the body has perished, and which may be supposed to confer on them an intelligence nearly akin to, if not identical with that of man, appears to have been entertained by Virgil. † The question as to the future existence of animals is raised by Origen. Also, whether human souls can be transferred into the bodies of animals. ‡ St. Augustine is asserted to have believed that animals were endowed with spiritual beings, which would

\* B. 9.

† Georg. lib. 4, l. 220.

‡ Vol. i.



exist in a future state. And that famous father of the Church Lactantius, allowed to animals everything in common with man, even a reasonable soul, except a sense of religion.\*

The French writer, De la Chambre, who was counsellor and physician in ordinary to the King of France, in his ingenious "Discourse of the Knowledge of Beasts", written in 1657, expresses it as his opinion, that "beasts reason, but that their reasoning is formed only of particular notions and propositions, wherein it is different from that of men, who have the faculty of reasoning universally; and that this faculty is the true difference of man, which marks the spirituality and immortality of his soul."† He remarks on the evident calculation and contrivance and apparent reasoning evinced by dogs, and also by wild animals in hunting.‡ He refers, also, to the dreaming of animals, as evidence of their possessing both memory and imagination.\* As regards the language of animals, he contends that their cries and accents are by the institution of nature, as well as the speech of men.§

Des Cartes, however, held animals to be not only destitute of reason, but probably of all thought; and he considered that they performed their various functions as mere automata, excited to motion only by means of animal spirits, which act upon the nerves and muscles. But when he alludes to the sensations of pain, hunger, and thirst, in the case of man, proving the intimate union between the soul and the body;¶ it appears difficult, consistently with his theory, to dispense with the existence of some immortal spiritual being in the case of animals also.

Hobbes remarks, that animals demur in their proceedings, in the same way that man does, who deliberates according as he is influenced by the hope of good or evil.\*\*

The famous Dr. Willis, in his very celebrated work, "*De Anima Brutorum*" (on the souls of animals), observes that the Platonists and Pythagoreans believed the souls of animals to be an incorporeal substance, part of the universal world, and that they were imprisoned in bodies as in sepulchres, and that the souls wandered from one body to another.†† He also asserts that the soul of the animal, as the inferior soul of man, is material and divisible, and coextended with the whole body.‡‡ He, however, infers that the souls of animals consist of particles of the same matter out of which the body is formed, but that they are choice, most subtle, and highly active.§§ In another part of the same

\* "*Pensilwood Papers*," vol. 1.

† P. 7.

‡ Pp. 84, 85.

¶ P. 150.

§ P. 279.

¶ Part 6.

\*\* "*Of Liberty and Necessity*."

†† Pordage's translation, p. 2.

‡‡ *Ibid.*, c. 2, p. 4.

§§ "*De Anima Brutorum*" (Pordage's translation), c. 2, p. 6.

great work, he contends, that if the souls of animals are immaterial, they are also rational; and he goes on to remark—"After what manner in brutes, perception, or discerning, or discrimination of objects, appetite, memory, and other species or kinds of inferior reasons, as one may say, are performed, seems very hard to be unfolded." Therefore, he says, some have attributed to animals immaterial souls existing after their bodies.\*

It may here be observed that the opinion entertained by some, of there being two distinct souls in man, the rational and the corporeal, appears nearly to correspond with the opinion which Willis expressed of man being endowed with both reason and instinct.† This writer, however, expresses a doubt whether we ought to assign souls of the nature of fire to bloodless animals inhabiting the waters.‡ Indeed, as animals differ greatly one from the other, as regards their manifestation of instinct, so it may be concluded that they differ correspondingly as regards their manifestation of it, and consequently as regards the vehicle or principle possessed by them in which it essentially resides.

Sir Matthew Hale remarks, in his famous work "On the Primitive Origination of Mankind", that it is impossible to resolve perception, phantasy, memory, the sagacities and instincts of brutes, the spontaneousness of many of their motions, into a principle that this proceeds from the modification of matter; and that they are not explicable without supplying some active determinate power of a higher extraction than the bare modification of matter, or disposition of organs.§

Dr. Henry More and Dr. Cudworth both held the opinion that animals are animated and directed by an incorporeal soul, not differing in kind from that of man, but only in degree.

Locke, in his renowned "Essay on the Understanding", holds, that animals to some extent compare ideas, that is, are able to reason as man does, although but very imperfectly.||

Sir Isaac Newton, in his "Principia", lays it down that "all sensation is performed, and also the limbs of animals moved in a voluntary manner, by the laws and actions of a certain subtile spirit, that is, by the vibrations of this spirit, propagated through the solid capillaments of the nerves, from the external organs of the senses to the brain, and from the brain into the muscles."

Dr. Priestley, in his "Disquisitions on Matter and Spirit", contends that if man be actuated by a principle distinct from his body, every brute animal must have an immaterial soul also.¶

The great naturalist, Buffon, in his renowned "Histoire Naturelle", considered that animals have in common with man an

\* *Ibid.*, "De Scient. Brut." c. 6, p. 32.

† *Ibid.*, c. 6, p. 40.

‡ "De Animâ Brutorum" (Parl. trans.), c. 3, p. 13.

§ S. S., c. 2, p. 49.

|| B. 2, c. 11, s. 5.

¶ P. 62.

interior as well as an exterior sense, but that in animals the interior sense is entirely material. Man has also this material sense, but he possesses besides one of a nature highly superior, which resides in the spiritual substance, and which animates and guides him. He deemed that animals have neither ingenuity, understanding, nor memory, because they are denied the power of comparing their sensations. Animals and idiots, he concluded, possess memory only so far as it consists in the renovation of our sensations, and not of the ideas. In particular animals, he considered that particular senses predominate, and that animals in general enjoy that of taste in a more exquisite degree than man does. In animals, whatever relates to their appetites strongly agitates their interior sense. He considered that all the actions of animals may be explained without allowing them either thought or reflection, the internal sense being sufficient to produce all their movements. Satisfying the appetite, he asserts to be the principal pleasure of animals.\*

Mr. Dean in his "Essay on the Future Life of Brutes", observes that the word soul, according to the doctrines of the ancients, has a three-fold meaning or distinction; and that it is considered alike as a spiritual, a sensitive, and a vegetable principle. That man is possessed of it in all three senses, animals in the two last, and trees, herbs, and plants have the vegetative soul only.† He contends, that if animals have souls, and in consequence may exist hereafter, we may superadd that they have ideas and a power of communicating them. Every species, says he, has a language peculiar to itself, by means of which all the individuals that compose it are able to converse with each other, to impart their pains and pleasures, their fears and dangers, their desires and intentions. And he asks, what can all this arise from, but an intelligent principle residing within them?‡

The celebrated navigator, Captain Cook, who had peculiar opportunities for making observations of this kind, remarks on the instinctive sagacity displayed by many wild animals, and particularly on the extraordinary capacity in this respect of the bears of Terra del Fuego, as observed by the natives, in discovering the properties of certain medicinal herbs, and both applying them to their wounds, and for the cure of internal disorders. ||

The great mental philosopher, Dugald Stewart, in his "Philosophy of the Human Mind", lays it down that brutes are under the more immediate guidance of nature, while man is left to regulate to a great degree his own destiny, by the exercise of his reason. Instinct, he says, is distinguished from reason by two circumstances. 1. By the uniformity with which it proceeds in

\* Barr's "Buffon," vol. v, pp. 17, 18, 23, 24, 28, 30, 33, 47.

† P. 62.

‡ Pp. 111, 112.

|| "Voyages Round the World," vol. 6, p. 2170.

all individuals of the same species. 2. By the unerring certainty with which it performs its office, prior to all experience. Animals, however, he observes, make some small acquisitions by experience, as appears from the sagacity of the old, when contrasted with the ignorance of the young; and from the effect which may be produced on many of them by discipline and education.

Mr. Smellie, in his "Philosophy of Natural History", asserts, that "the natural superiority of man over the other animals is a necessary result of the great number of instincts with which his mind is endowed."\*

In that remarkable work, "Vestiges of the Natural History of Creation", it is laid down that, "the difference between mind in the lower animals and in man, is a difference in degree only; it is not a specific difference."†

And, Sir William Lawrence, in one of his "Lectures on Comparative Anatomy", asserts, that "we cannot deny to animals all participation in rational endowments, without shutting our eyes to the most obvious facts."‡

According to Mr. Smee, in his work "On Instinct and Reason", "man only differs from the dog inasmuch as he has a higher organization."||

And as regards the future being of animals, alluded to, Mr. Isaac Taylor, in his "Physical Theory of Another Life", observes: "It must indeed be confessed that the argument of the immaterialist, as sometimes conducted, if pushed to its consequences, would go near to imply the immortality of birds, beasts, and fishes, of insects, and of zoophytes!"§

Mr. Herbert Spencer, in his "Principles of Psychology", says, that "instinct may be described as compound reflex action."¶ And he concludes, that "the commonly assumed *hiatus* between reason and instinct has no existence;"\*\* asserting, "the impossibility of establishing any line of demarcation between reason and instinct."††

Mr. Darwin, in his "Descent of Man" says, that "few persons any longer dispute that animals possess some power of reasoning."‡‡

Professor de Quatrefages, in his "Rapport sur les Progrès de l'Anthropologie" (Report on the Progress of Anthropology), goes still further, in remarking that to this extent domestic animals may even be regarded as religious beings, in that they readily obey those who correct or indulge them. And that animals fly to man for protection, as a believing being does to his God.||||

\* C. 17, p. 435.

|| P. 220.

†† *Ibid.*

† Smith's edit., p. 253.

§ C. 20.

‡‡ Vol. i, p. 46.

¶ Vol. i, p. 432.

‡ Sect. 4.

\*\* *Ibid.*, p. 453.

|||| *Ibid.*, pp. 85, 87.

The late Dr. Darwin, in his "Zoonomia", and Tupper, in his "Sensation in Vegetables", attribute irritability to plants. And the late Professor Sir J. E. Smith, in his "Introduction to Botany", suggests, that as vegetables possess life, irritability, and motion, the exercise of the vital functions may be attended with some degree of sensation, however low.\* He also suggests that, as a consequence of this, vegetables may experience "some share of happiness."

Such is, I believe, a fair summary of the leading axioms enunciated by the leading minds who have devoted their great powers to the investigation of the subject before us. Other authorities might be cited, but I believe that all that is important in them is comprehended in the opinions which I have adduced. On a cursory view they may rather appear to throw sudden corruscations or flashes of light, than to afford any steady illumination to guide us in our career. Be this as it may, the irregular glare which they cast is so far valuable, however inferior it may be to a clear and steady light. It is folly to refuse availing ourselves of the lamp at night, because we cannot then have the light of the sun. The differences and even apparent contradictions as regards their conclusions, will also, in many cases, be found more apparent than real; more extensively varied than actually irreconcilable. But they may all alike, if comprehensively considered and liberally viewed, aid us in arriving at a correct conclusion. We may not agree entirely with any of them. But still less shall we entirely disagree. So also with regard to each other, they do not absolutely contradict, however they may qualify each other's conclusions. If none of them are entirely right, none of them are entirely wrong. The principles enunciated by each may suggest something that is valuable for our guidance. And as is the case with regard to certain substances in nature, although very opposite in their respective qualities, they may together amalgamate into, and each contribute to form a valuable and indeed essential ingredient in the same compound.

The two provinces of intellect and instinct appear to me to resemble two different countries, which in many of their main features and productions bear a close similarity and affinity one to the other, while in certain other respects they are strikingly and totally dissimilar. Instinct boasts of some productions, and bears some precious fruits which intellect or reason is totally unable to bring forth; while, on the other hand, the nobler products of intellect are incomparably richer and more luxuriant than anything which instinct can rear, and whose lofty heads tower into the regions of celestialty, while the ramifications of instinct only run upon the ground.

\* Page 3.



Intellect and instinct differ moreover in two essential respects—as regards the topics which they embrace, and as regards their mode of dealing with those topics. With respect to the first of these points, intellect embraces the consideration of abstract as well as substantial or material topics; those which are moral and intellectual as well as those which are material, but which latter only are within the scope of instinct. As regards the essential difference between intellect and instinct, with respect to the mode of dealing with various topics; while instinct merely takes cognizance of them so far as sensation proceeding from them conduces to accomplish this end, intellect not only takes cognizance of them in this manner, but proceeds to certain other operations of various kinds, founded indeed upon this cognizance, but carrying on those operations much further, and which are effected by the action of those various intellectual faculties and capacities with which man only is endowed.

That animals possess a certain amount of intellect or intelligence, resembling and in several respects approaching to that of man, it appears on many accounts reasonable to infer. In this respect, as we have seen, Locke, Hobbes, Willis, De la Chambre, and the more modern authorities, Sir W. Lawrence, the author of "*Vestiges of Creation*," and Mr. Herbert Spencer, substantially agree. They differ mainly, but perhaps not very essentially, as to the extent to which animal intelligence may be carried or applied. That the limit of their capacity is very inferior to that of man, none of them would I believe deny; while, on the other hand, the authorities cited would agree with Sir Matthew Hale and Captain Cook, as to the wonderful sagacity sometimes displayed by animals, in certain respects far exceeding that of man.

An interesting question might here be raised, whether intelligence to any extent is essential to instinct, and whether all the various operations effected by instinct might not be accomplished through the aid of sensation alone, independent of any intelligent direction. That the sensation of animals, especially those in a wild state, whose senses become considerably blunted by domestication, is vastly superior to that of man, few observers of animal nature, from Aristotle to Captain Cook, will entertain a doubt. It appears also obvious that they are to a large extent here impelled by the acuteness and power of their senses. This is probably what Des Cartes meant when he speaks of them as mere automata, though, as we have seen, he qualified his meaning in another passage. Nevertheless, the extraordinary uniformity with which animals act, resembling the uniformity of a machine or of an automaton, justifies Des Cartes in the comparison which he made of them. Thus, all birds of the same species build their nests exactly alike, provided of course that they have all access alike to

the same materials; nor do they improve by practice, as in the case of reasoning beings who act irregularly and uncertainly.\*

In certain cases, nevertheless, as remarked by Locke and Hobbes, animals doubtless exercise deliberation with regard to their actions. In addition to this, certain old animals, more especially horses, and dogs, and hares, and probably others also, although we have not so attentively observed them, display a great deal of cunning, and that in various ways.† Now cunning implies calculation to a certain extent, and calculation to a certain extent intellect, or reasoning power. Hence, although animals in many of their instinctive operations, particularly in the choice of food and the provision for their young, and more especially as regards their migration, appear to be actuated by a sort of blind irresistible instinctive impulse, which has caused them to be considered as mere machines, as is done by Des Cartes, and their unerring precision in which they owe I believe mainly to their very perfect sensitive organs, far superior to those of man; yet in certain of their actions, such as those which imply calculation and also memory,‡ it would seem that they must necessarily be directed by some principle or endowment independent of, and quite beyond this, and which would lead to the conclusion, by no means inconsistent with the foregoing theory, that there exists in animals some being which, though very limited in its capacities, is of a spiritual intelligent nature, analogous to the soul in man, as held by Virgil and Willis, and certain other philosophers to whom I have referred.

I may here passingly remark, that we have no right to object to animals being endowed with an immaterial principle, merely because such an argument may be supposed to weaken, though I believe it contributes to strengthen, the proof of man possessing a soul. Half the errors, both in philosophy and theology, have arisen from the attempt to distort facts, so as to prevent them from squaring with the obvious consequences to which they lead.

Not only, however, several distinguished philosophers, but some eminent divines have attributed to animals not merely souls, but a future state of being. In addition to the ancient fathers of the Church, whose opinions on this subject I have already cited, the famous Archbishop Tillotson remarked that "the most common and general philosophy of the world hath

\* "A man has to learn his work by practice; a beaver, on the other hand, can make its own dam or canal, and a bird its nest as well, or nearly as well, the first time it tries, as when old and experienced."—Darwin's "*Descent of Man*," vol. i, p. 39.

† See Leroy, "*On the Intelligence and Perfectibility of Animals*," pp. 105, 122, 123.

‡ *Ibid.*, p. 115.

always acknowledged something in beasts besides their bodies, and that the faculty of sense and perception which is in them, is founded in a principle of a higher nature than matter. And as this was always the common philosophy of the world, so we find it to be a supposition of Scripture, which frequently attributes souls to beasts as well as to men, though of a much inferior nature." The Archbishop further remarks, that "immortality imports that the soul remains after the body, and is not corrupted or dissolved together with it. And there is no inconvenience in attributing this sort of immortality to the brute creatures."\*

That language to a certain extent, and of a certain kind, is possessed by animals, we all know, and that language appears to me to be exactly correspondent with, and is precisely reflective of the extent of their intelligence. They can communicate to each other their physical wants and emotions by this means, but are unable to carry on any conversation relating to abstract topics, such as man can effect. Their language is all sufficient for their wants, and for the notions that they are capable of receiving, but does not extend beyond this. It is in fact language simply, but does not amount to articulation, or as Professor De Quatrefages well expresses it—"Animals have voice, man only speech."† Here Locke, and Hobbes, and Willis, and De la Chambre, and modern writers, appear to coincide. The only language of animals is, moreover, oral. But, although they have no artificial written language, in the place of this, outward visible objects may to some extent serve as a natural symbolical language.

I would suggest therefore, as a deduction from what I have advanced, that instinct may be correctly defined to be an impulse implanted in each animal, and to a limited extent, and in a certain mode, in many if not in all vegetables also, which is in some cases originated, and in all cases is directed by sensation, or, a certain sensitive impulse or irritation. The exquisite nature, peculiar character and relative extent of the sensitive organs and endowments in the beings so excited, are what mainly determine the quality and amount of their instinctive powers, although these powers may be exercised through the aid of some immaterial, and to a limited extent, intelligent being, or principle implanted in or annexed to the animal. Instinct, however, not only varies in each creature according to its nature and organization, form, and condition; but in each creature it varies so as to adapt itself to the particular exigencies in which it is placed. These instinctive powers moreover stimulate, and also regulate the propensities and habits and actions of each particular animal. But inasmuch as not only

\* Sermon 122.

† "Rapport sur le Progrès de l'Anthropologie." See also Leroy "On the Intelligence and Perfectibility of Animals," pp. 72, 73.

animals of every variety, the lowest as well as the highest, are endowed with and guided by instinct, but vegetables also evince proof of being to a certain extent thus gifted and thus directed: an evidence is thus afforded, that there is no necessary connection between intelligence and instinct.

Instinct, indeed, never arrives at, although it may appear sometimes nearly to approach intellect, as in the case of animals exercising memory, hesitation, and calculation, already referred to; inasmuch as instinct does not at all or in any respect qualify the beings endowed with it to deal with any of those high abstract and moral topics in which intellect alone is capacitated to engage. Intellect is, in fact, to instinct, what flying is to walking. Animals without wings can no more hope to soar in the air, than animals without intellect or reason can be expected to attain any one of the sciences, to read, to write, or even to talk. But as animals without wings are much better fitted to traverse the earth than those who can fly; so the instinctive power of animals enables them to perform many of their functions far more perfectly than reason directs man in the same operations. Instinct appears to be perfect as regards the ends for which it is adapted, but it is limited to those ends. Intellect has a far greater sphere extended to its range, but it is far less perfect and unerring as regards the operations which it effects. Intelligence and instinct, like two parallel lines, run very near together, but they can never by any possibility meet. Although they greatly resemble one another, they are totally and essentially different. Instinct is the highest development of animal being. Intellect is the lowest manifestation of a wisdom which is divine.

#### DISCUSSION.

Mr. SERGEANT COX.—Instinct is one of the many words which we are said to use to conceal our ignorance. Nevertheless, it imports something whose existence we recognize, and of which he had hoped to hear a definition. The only approach to it was that it was an unreasonable impulse. But animals are not mere machines. They exercise an intelligent choice, as we do. It is not true, as usually asserted, that animals are led by instinct, man by reason. Animals have reason as well as instinct, as all who observe them will admit. Man has instinct as well as reason. The difference between them is not in kind, but only in degree. His contention would be that instinct was the result of brain structure, adopting the Darwinian theory of evolution and progression. The newly-hatched chick pecked its food and knew its mother; why? because its brain by a long succession of breeding was constructed in the same manner as our brains become shaped by education, and thus without education the brain receives impressions and performs consequent actions which otherwise could be attained only by experience. There are three mental conditions, instinct, experience, and

reason. When the brain thus acts by force of its own structure, anterior to experience, it is what we call instinct, and we do this or that, we know not why, only that we are prompted to do it. Then comes experience, and we make a choice between actions, because we have learned by trial that one is preferable to the other. Lastly, we have the aid of reason, which is nothing more than putting two experiences together and deducing from them a probability. For instance, we have learned that a certain thing has certain qualities, and that those qualities have done certain services. We find another thing having the like qualities. Then reason concludes that, having the like qualities, it would probably produce the same effects. However long the chain of reasoning, it is nothing more than a repetition of the same simple process. He then related instances of reason shewn by animals, as also of their instinctive acts. He attributed the similarity of their nests in birds, not to the presence of instinct, which would make them exactly alike, nor to the absence of reason, for they certainly adapted them to surrounding circumstances, but to a deficiency in the faculty of imagination. Man varies his dwellings because by his imagination he is enabled to construct in his mind habitations of various forms. Wanting this, birds can build only according to experience, modified by surrounding circumstances. The general structure of their nests is the result of instinct and of inherited brain structure, but reason enables them to adapt the external form to the locality; while they have not imagination to picture in their own minds, and consequently to construct, an entirely different structure.

Dr. RICHARD KING, Mr. EDWARD CHARLESWORTH, and Mr. PARK HARRISON also joined in the discussion.

Mr. G. HARRIS said that he was gratified to see Mr. Sergeant Cox, who had only lately joined the Anthropological Institute, taking so active a part in the discussion, and felt sure that he would prove a great acquisition to the Society. Mr. Cox, however, complained that he (Mr. Harris) had given no definition of instinct. He had, nevertheless, given definitions in abundance from all the first authorities on the subject, although the conclusions at which he endeavoured to arrive might not be satisfactory. And indeed, as the president had remarked, the matter was almost insoluble. Mr. Cox thought that the nearest approach to a correct account of instinct was given by Mr. Darwin, for whom he (Mr. Harris) had the highest admiration as a naturalist, without venturing to subscribe to all his particular theories. The president had stated that the most satisfactory definition of instinct is that afforded by Mr. Herbert Spencer, and which was one of those quoted in the present paper. The subject before them was one peculiarly suited for discussion, and he (Mr. Harris) was gratified that his paper had been the means of calling forth the expression of so many various sentiments as it had done. Agreement with him was not to be expected, and he was not so unreasonable as to desire it. Debates of this character, when fairly conducted, cannot but conduce to the attainment of truth; and to promote this end was perhaps the most successful result which any paper, on so uncertain and speculative a subject, could be expected to attain.

The meeting then separated.



APRIL 1ST, 1873.

Professor BUSK, F.R.S., *President in the Chair.*

THE minutes of the previous meeting were read and confirmed.

The following new members were announced: Sir THOMAS GORE BROWNE, K.C.M., Athenæum Club; RICHARD WORSLEY, Esq., Reform Club; THOMAS H. GAY, Esq., 103, Victoria Street.

The following presents were announced, and the thanks of the meeting voted to the respective donors.

## FOR THE LIBRARY.

From the ACADEMY.—Bulletins de l'Académie Royale des Sciences de Belgique, 2me serie, tomes 31-34; Mémoires des Membres, do., tome 39; Mémoires, couronnés et autres, do., tome 22; Centième anniversaire de fondation, 2 vols.; Annuaire de, do., 1872-3.

From the AUTHOR.—Tables de Mortalité et leur Developpement; Unité de l'Espèce Humaine; Notices extraites de l'Annuaire de l'Observatoire de Bruxelles, pour 1873. By Ad. Quetelet.

From the AUTHOR.—Etudes sur les facultés Mentales des Animaux, comparées à celles de l'homme, 2 vols. 1872. By J. C. Houzeau.

From the EDITOR.—La Revue Scientifique, Nos. 38 and 39. 1873.

From the SOCIETY.—Jahrbuch der K. K. Geologischen Reichsanstalt, Band xxii; Verhandlungen, ditto, Nos. 14, 18; General Register, ditto, Bande, xi-xx, Wien.

From the SOCIETY.—Mittheilungen der Anthropologischen Gesellschaft in Wien, Nos. 9 and 10.

From the INSTITUTION.—Journal of the Royal United Service Institution, vol. xvii, No. 70.

From the EDITOR.—Matériaux pour l'Histoire Primitive et Naturelle de l'Homme, Dec. 1872.

From the SOCIETY.—Proceedings of the Royal Geographical Society, vol. xvi, No. 5, vol. xvii, No. 1.

From the EDITOR.—Nature (to date).

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The President having vacated the chair in favour of Sir John Lubbock, Bart., read a paper as follows:

REMARKS on a COLLECTION of 150 ANCIENT PERUVIAN SKULLS, presented to the ANTHROPOLOGICAL INSTITUTE, by T. J. HUTCHINSON, H.M. Consul at Callao [with Plates VII and VIII]. By Professor BUSK, F.R.S.

THIS important and interesting collection of ancient Peruvian crania was forwarded during the year 1872, by Consul Hutchin-

son, who has devoted much time and labour in the exploration of the ancient burial places in the country around Callao.

The first instalment consisted of eight skulls from a "*huaca*", or ancient burying ground near Santos, to the north of Callao. They are considered by Mr. Hutchinson to be those most likely of the tribe of Chinchas, or Huancas, or perhaps, as he surmises, of Quichuas, or Aymaras; all of which tribes he states are now probably absorbed into the Cholos, a *mestizo* or mixed race. In the neighbourhood of this locality, at a place called Ica, Mr. Hutchinson had exhumed an earthenware round jar, or jug, containing all the bones of a full-grown man, and side by side with it were several smaller urns, containing the bones of children. On exposure to the air, these bones fell to powder, but the urn has been sent. Besides the eight skulls from the locality above referred to, Mr. Hutchinson sent twelve more to Dr. B. Davis, who has forwarded them for exhibition on the present occasion, and it is much to be regretted that he has not himself been able to attend, to give us his views concerning them.

The next despatch from Mr. Hutchinson, accompanied with a letter, dated 26th April, 1872, comprised twelve skulls, with the lower jaws, which he says were picked up in the same place of interment, near Ancon, from which the mummified bodies had been turned up by the Spaniards at the time of the conquest, when searching for treasure. However this may be, it is curious to find that among these bones, and other relics from the same place, is the entire hoof of a mule, which could only have been introduced by the Spaniards at or since the invasion of Peru by Pizarro and his followers. These crania were accompanied by some leg and thigh bones with the dried flesh still upon them, showing that the bodies had been buried in the usual sitting posture. Together with them, also, were some fragments of fishing nets, and a wooden club and sword. The site is about twenty miles north of Callao, and about a mile only from the sea-shore.

In another communication, dated August 20th, Mr. Hutchinson announced, that he had sent off another collection of from thirty-six to forty skulls, with the lower jaws, and states that he had collected the great number of three hundred and sixty-eight skulls for Professor Agassiz; and noticing that amongst those here collected, was one with the frontal suture open.

Another letter of September 12th, 1872, announced the sending of five cases of Indo-Peruvian skulls. Of these (cases 1, 2), fifty-eight were procured from Pasamayo, five miles south of Chançay, and thirty miles north of Callao. At this place it is stated that there are two burial-grounds close to the sea-shore, and that the surface of the ground for nearly a mile square from the beach up a sand hill, is white with skulls and bones derived

from bodies which were dug up, no doubt, by the early Spaniards. He remarks also, that some of the lower jaws from this place are stained with copper on the inside, from a coin which had been placed in the mouth, and one of them, he states, has had a copper plate or skull-cap on the head. A very curious circumstance, when taken in connexion with what we know, was the practice among some Asiatic, and in remote times, even among some Western European peoples, of encasing the skulls of friends or enemies in metal; a subject upon which I offered some remarks on a former occasion, when describing an engraved calvaria from China.\*

Mr. Hutchinson remarks that among this collection there were also two in which the frontal suture was not closed.

Another case contained twenty-three skulls from Ancon, and Mr. Hutchinson remarks that in that neighbourhood there are three different styles of graves at places situated some distance apart; but strange to say, here, as at Pasamayo, there are vestiges of houses.

The burial places are:—

1. Cylindrical or funnel-shaped graves, lined on the inside with stones, in some of which the bodies appear to have been placed upright.

2. An ordinary longitudinal grave, of the same style as those in our churchyards.

3. A large square excavation which is roofed with rafters covered over with bamboo matting. In some of these latter Mr. Hutchinson found five or six bodies, including men, women, and children, swathed in clothes, and with the faces covered, some with cotton, others with llama wool.

At Ancon all the graves contain either pottery, or cloth, or pieces of fish nets, or needles for manufacturing nets, or lace work, or bags that resemble reticules for ladies.

Another case contained thirty-three skulls, from the Cerro del Oro, in the Canéte valley, interior to Cerro Azu, about a hundred miles south of Callao; and in another were thirteen skulls from the same place, together with two from Pasamayo, and a few ordinary specimens of prehistoric Peruvian crockery ware.

Those from Cerro del Oro are from the brow of a hill, which shows evidence of having been densely populated in former times, from the quantity of *adobe* ruins in the neighbourhood. "To the best of my recollection", he says, "it was here that Pizarro and Almagro had their first meeting. And the old road from the Canéte Valley to Lima passes by the ruins of the celebrated temple of *Pachacamac*."

"The whole of the Canéte Valley, now covered with sugar

\* "Ethnological Journal," vol. ii, p. 73, 1869.

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Fig. 1.



Fig. 2.



Fig. 3.

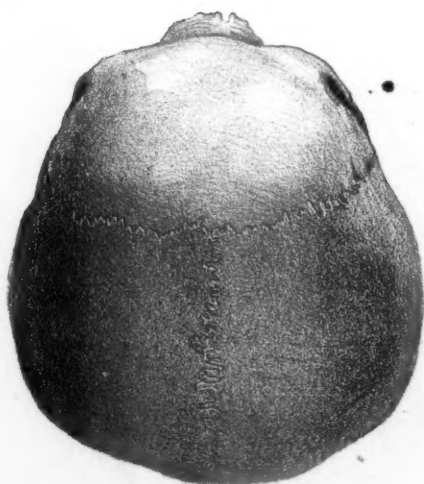


Fig. 4.



SCALE.





Fig. 5.



Fig. 6.



Fig. 7.

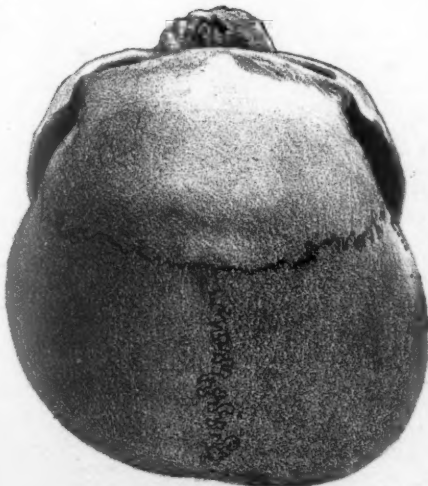
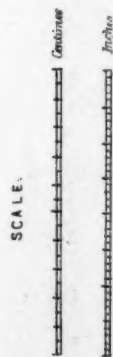


Fig. 8.





plantations, is full of Huacas, or Mounds of interment described by Prescott. So also in the Valley of the Runiac, as well as that of Huatica, in the districts between Chorillos and Lima converging seaward to Callao and Ancon. These mounds are for the most part still unexplored. Of some such Prescott writes: "vast mounds of an irregular or more frequently oblong shape, penetrated by galleries running at right angles to each other, were raised over the dead, whose dried bodies or mummies have been found in considerable numbers, sometimes erect, but more often in the sitting posture common to the Indian tribes of both Continents. Treasures of great value have also been occasionally drawn from these monumental deposits, and have also stimulated speculators to repeated excavations, with the hopes of similar good fortune."

"But the skulls which I send", Mr. Hutchinson goes on to say, "are not from '*huacas*', but from places of interment such as are described in '*Peruvian Antiquities*', by Don Mariano Eduardo Rivero."\*

Having thus, for the most part in Mr. Hutchinson's words, described the localities from which the present collection of crania was procured, I will proceed to offer a few remarks upon them regarded craniologically. But since the matter has come more particularly under my attention, I have found that so much has been already written on the subject by others, that very little remains for me to remark without repeating what has been already published, a general *resumé* of which will be found in Professor Daniel Wilson's "*Prehistoric Man*", and "*On the Cranial Characters of the Peruvian Races of Men*", a paper by Mr. C. C. Blake in the second volume of the Transactions of the Ethnological Society for the year 1861-2; a paper which is especially valuable for the copious references to the previous literature on the subject.

Perhaps, however, the most complete view within a small compass of the subject as regards these ancient Peruvian races, will be found in Professor D. Wilson's work above cited (p. 225), where he gives an account of his observations, made upon the collection of mummied bodies and crania in the possession of J. H. Blake, Esq., of Boston, and which was brought by him from ancient Peruvian cemeteries on the shore of the Bay of Chacota, near Arica, in latitude 18° 30' S., which burial places appear to be of exactly the same kind as those from which Mr. Hutchinson's collections were procured. As Dr. Wilson's work is in our library and readily accessible, there is no occasion for my making any lengthy extracts from it on the present occasion. It may be mentioned, however, that Mr. Blake remarks that

\* Chap. viii, p. 200 et seq. G. Putnam and Co., New York, 1858.

"there is no record or tradition, concerning this and similar cemeteries, of the period when they were made use of; and it is by no means certain that they contain the remains of the ancestry of the Indians who now occupy the country."

He remarks also that the colour and texture of the hair are facts of great importance to the Ethnologist, as indicating essential differences from the modern Indians in one important respect; and therefore confirming the probability of equally important ethnic differences suggested by other evidence.

With respect to this point, Professor Wilson (p. 235) states that he has repeatedly obtained specimens of hair from Huron graves near Lake Simcoe, the most modern of which cannot be later than the middle of the seventeenth century, yet in all of which the hair retains its black colour and coarse texture, unchanged alike by time and inhumation; and in this respect corresponding with that of the modern Indians of South America and also of the Chinese and other true Mongols of Asia.

The hair, which is so abundant upon many of the crania on the table, is, as will be observed, by no means coarse, but rather fine and silky,—nor is it truly black, but rather of an auburn tint, whilst on one the hue is reduced to a dirty stone colour. But there is no reason, perhaps, on this account to assume that the hair in both cases was not originally black, exposure in a hot, arid, sandy soil, and in the latter case probably to the weather, being sufficient to account for the change of colour from black to the present tint. But the comparative fineness and coarseness are another and more important matter, and if, upon proper microscopic examination and comparison, the differences stated to exist between the ancient and modern Indian hair should be found really to exist, a strong argument would arise in favour of those who suppose that the ancient cemeteries may not really contain the remains of the ancestors of the Indian tribes of the present day.

As will at once be perceived, the present collection, taken as a whole, presents a remarkable uniformity of cranial conformation. This is of a strongly brachycephalic type.\* I have not measured the entire collection, but having selected what appear to be the fairest examples of the various forms, their mean length appears to be about 6.25 ins., and width 5.6 ins., giving a cephalic or latitudinal index of .905, only two falling below .800. In this estimation, however, were included both artificially compressed and, so far as I can perceive, normally shaped skulls. Separating these two from each other, the cephalic index of the supposed

\* Linnaeus's term "plagiocephalic" is emphatically descriptive of the more common form of American skull, and may be conveniently used to distinguish the broad head with flattened forehead, so characteristic of the greater part of the American races, as, in fact, it was used by him.

TABLE OF MEASUREMENTS OF ANCIENT PERUVIAN SKULLS.

SPECIMEN.	1. General.				2. Breadth.				3. Radial.				4.	5. Longitudinal Arc.			6. Transverse Area.				7. Indices.				8. Contents.		9. Sex.				
	Length.	Breadth.	Height.	Postorbital.	Frontal.	Parietal.	Occipital.	Zygomatic.	Frontal.	Vertical.	Parietal.	Occipital.		Maxillary.	Fronto-Nasal.	Circumference.	Frontal.	Parietal.	Occipital.	Multitudinal.	Alitudinal.	Maxillary.	Facial.	Capacity.	Weight of Brain.						
No. 1 A .....	65	55	9	37	47	44	43	53	40	48	43	43	40	86	103	49	50	44	145	11.6	129	132	110	546	886	4	78.5	39.5	M.	42.38	
" 2 A .....	63	47	9	31	40	47	38	48	38	48	44	38	38	180	42	42	47	42	139	10.3	112	123	110	758	806	4	87.0	47.5	M.	44.0	
" 3 A .....	63	51	44	33	44	48	40	50	43	45	34	32	32	180	42	42	47	42	139	11.0	120	128	106	822	709	4	84.0	34.0	M.	47.5	
" 4 A .....	64	53	54	65	44	50	41	50	43	45	38	40	37	183	43	45	45	135	11.4	123	129	111	812	843	3	73.7	40.0	F.	44.0		
" 5 A .....	64	59	50	35	48	68	43	53	46	48	34	35	36	185	43	46	47	46	134	12.7	136	141	109	1010	862	3	72.0	39.0	F.	46.0	
" 6 A .....	64	58	55	37	47	64	45	54	43	46	34	41	37	185	43	46	47	46	134	12.7	136	141	109	875	876	3	85.0	46.0	M.	46.0	
" 7 A .....	67	59	53	36	47	67	46	54	41	46	34	35	35	190	43	45	45	133	11.4	131	137	114	1080	913	3	77.5	43.0	M.	46.0		
" 8 A .....	66	57	55	38	46	65	46	50	44	46	34	35	35	192	43	46	46	133	11.6	129	137	114	890	869	3	78.30	43.0	M.	46.0		
" 9 A .....	64	56	56	37	46	65	43	51	45	47	37	35	35	193	43	48	46	139	11.8	131	137	114	861	845	4	80.0	44.0	M.	46.0		
" 10 A .....	63	55	55	36	44	67	43	52	44	46	47	37	35	193	43	51	50	136	11.3	129	143	123	874	874	3	90.0	50.0	M.	44.0		
" 11 A .....	63	58	56	34	46	67	43	47	43	46	49	39	38	193	43	48	46	136	11.4	127	132	113	885	897	4	81.0	44.0	M.	44.0		
" 12 A .....	63	58	57	37	47	66	44	50	43	46	47	37	35	193	43	47	47	136	11.4	127	132	113	887	897	4	76.8	41.5	F.	44.0		
" 13 A .....	63	58	55	36	47	66	44	52	43	46	48	39	38	193	43	47	47	136	11.4	127	132	113	887	897	4	71.5	38.5	F.	44.0		
" 14 A .....	64	61	53	38	43	68	41	49	41	44	37	34		193	43	48	46	137	11.6	130	137	114	943	894	4	84.8	47.0	M.	46.0		
" 5 B .....	64	61	53	39	50	68	47	56	46	49	38	38		193	43	48	46	137	12.0	135	141	116	1000	719	3	89.5	47.0	M.	46.0		
" 6 B .....	64	61	57	40	51	69	46	57	46	49	38	38		198	45	48	46	143	12.6	139	145	118	1030	886	3	86.8	48.0	M.	46.0		
" 7 B .....	61	63	57	38	52	61	43	50	45	46	39	39		197	43	48	44	143	12.6	142	143	116	984	895	3	87.5	48.38	Long.	46.0		
" 8 B .....	61	60	54	37	52	59	43	54	45	46	38	37		195	47	42	43	143	12.3	133	138	116	971	701	3	86.5	47.0	Long.	46.0		
" 9 B .....	67	53	53	35	43	52	42	47	33	45	49	49	37	193	43	48	46	145	10.3	120	126	120	791	701	3	81.5	40.5	Long.	46.0		
Quana V.I. ....	73	58	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Flat.	
Titicaca .....	72	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Flat.	
Perno .....	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	Flat.



normally shaped crania is about .873, the greatest being .935, and the least .812, and of the clearly artificially deformed or flattened ones about .979, the least being .861, and the greatest 1.32.

These figures show how very much the latitudinal index is exalted by fore and aft compression of the skull, and the almost equally great effect in increasing the vertical height will be seen in the fact that the altitudinal index of the normal skulls is about .843, the greatest being .919, and the least .806, whilst in the compressed ones the altitudinal index rises in the mean to .878, the greatest being .919, and the least .824.

As regards the comparative cubic capacity of the two kinds of skull, I am not able to speak positively, as, in order to determine this with any accuracy, it will be necessary to separate, so far as is possible, the male and female skulls for the reason, first, that the latter are of course much less capacious, and secondly, that in the case of artificially deformed skulls, if it be true as most writers state that it is only the males who are subjected to treatment, no comparison can be instituted unless the latter are eliminated. But so far as my experiments have gone they would have served to confirm the general opinion, that the compression has no effect in diminishing or enlarging the cranial capacity—nor is it likely that it should. The mean capacity of the larger skulls, which may be regarded as males, appears, so far as I have gone, to be about 80 cubic inches, equivalent to a brain of about 45 ounces, roughly estimated. This capacity and the measurements above cited show that the crania generally are of small size.\*

It will also be seen when comparing the numbers I have given with those afforded by Professor Wilson (p. 222), taken from a series of ancient crania from North American mounds and caves, that they very nearly correspond. In the mound skulls the mean length is given as 6.54 ins., and width 5.67, the cephalic index being .861, and in those from sepulchral caves, as  $6.62 \times 5.78$ , with a cephalic index of .873; figures that show clearly enough that even at that distant period there must have been a great similarity between the inhabitants of the western part, at any rate, of North America and of the seaboard regions of South America, and, it may be added, with the modern inhabitants of the same regions.

Besides these brachycephalic crania, which form the bulk of the present collection, there are a few of a more elongated form; but these, however few in number, are of especial interest, opening up as they do the interesting question as to whether there is really more than one type of skull to be found among the ancient

\* This is in accord with the statements of all observers.

Peruvians, and also the still wider one whether there is more than one type peculiar to the American Continent.

As is well known, Dr. Morton was of opinion, and no man's opinion can be more weighty, that there was but one American type of skull, exclusive of course of the Esquimaux, and that of strongly brachycephalic form. According to Morton, the Indian skull "is of a decidedly rounded form. The occipital portion is flattened in the upward direction, and the transverse diameter as measured between the parietal bones is remarkably wide, and often exceeds the longitudinal line." The forehead is low and receding and rarely arched,—a feature that is regarded by Humboldt, Lund and other naturalists as characteristic of the American race and serving to distinguish it from the Mongolian. The general question whether a diversity of type exists among the native races of America down to the present day, need not here be discussed; but I would simply remark that, so far as my own observation of collections goes, there is every reason to believe that the brachycephalic type exemplified in the present collection and shown on a somewhat larger scale, but with precisely the same essential features in the Chinook Indians and in the natives of Vancouver's Island, prevails amongst all the native tribes, at any rate in the seaboard regions of North and South America, from Nootka Sound round the coast of Patagonia and up the east coast, within the historical period, to the Caribbee Islands,—whether it extended further north on the Atlantic shores in earlier times I do not know.

With regard to the dolichocephalic type of American skull, and the tribes amongst which it exists in North America, I need merely refer you to Professor Wilson's copious data, at the same time expressing my belief that it will be found to prevail, or to have prevailed, throughout the greater part of the central or east central parts of America, both North and South, from Canada to Tierra del Fuego. The whole question is ably stated and argued by Professor D. Wilson, who, with Mr. J. H. Blake and others, is of opinion that not only are two distinct forms of skull to be found in the ancient cemeteries,—one rounded or globular, and the other elongated,—but also that two distinct types of skull are at the present day to be observed amongst the existing American populations. The evidence to this effect, both as regards the ancient skulls, cited by Professor Wilson, is amply sufficient to decide the point.

The evidence of the existence of a dolichocephalic type afforded in the present collection is not very abundant, but is nevertheless decisive. And if it be true, as is extremely likely, that the practice of artificial deformation of the skull has, in most cases, originated in a desire simply to increase or to add to the

natural features, we cannot fail to perceive, in the elongated skulls from Titicaca, that that peculiar kind of deformation has arisen from a desire to add to the attractive features of the peculiarly elongated form of skull, of which several instances are presented in the present collection.

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The Director read the following paper:

*On ANCIENT PERUVIAN SKULLS [with plate IX].* By J. BARNARD DAVIS, M.D., F.R.S., V.P. Anthropological Institute.

PROFESSOR AGASSIZ during his late travels went to Callao, in Peru, and when there he received great attention from Her Britannic Majesty's Consul, Mr. Thomas J. Hutchinson. Mr. Hutchinson made a fine collection of skulls of the ancient Peruvians, and other antiquities from the Peruvian cemeteries during the stay of Professor Agassiz, and presented the whole collection of three hundred and eighty-four skulls and other articles of pottery, etc., to him for the museum at Cambridge, in the United States. I send a copy of the letter of Professor Agassiz, who states the great value of the collection, and expresses his warm thanks for it.

Another fine collection of Peruvian skulls has been sent to the Anthropological Institute by Consul Hutchinson, which I am informed is being exhibited. I have no doubt it will attract much attention, and will receive considerable elucidation from the observations of craniologists present, particularly from the President. At the request of Consul Hutchinson, I have forwarded a number of articles of Peruvian pottery obtained from the cemeteries, to be exhibited at the same time.

It will not be necessary for me to say anything of consequence respecting the skulls, as this will be done more accurately and more copiously by very competent gentlemen, I have no doubt. I will merely refer to one point, *i. e.*, the so-called *long* skulls of the ancient Peruvians, which was treated more at length in the "*Thesaurus Craniorum*", p. 246. It is there stated that Professor Morton, the distinguished American craniologist, in the early period of his researches, considered that there were both natural dolichocephalic and brachycephalic crania among those obtained from the Peruvian cemeteries. He subsequently saw his mistake, and perceived that the longer examples had obtained this character merely from the interference of art. A more recent investigator, Dr. Daniel Wilson, of Toronto, who has acquired a deservedly high reputation in various pursuits, both scientific and literary, has also devoted much attention to craniology. Having the opportunity of ex-

aming many collections of Peruvian skulls, particularly that made by Mr. J. H. Blake, now at Boston, in Massachusetts, he has revived the former opinion of Morton.

Dr. Wilson expresses his conclusion upon the subject emphatically in these words: "It is not at all necessary for the confirmation of the opinion reasserted here, that there are two essentially different types of Peruvian crania, to affirm that the form of the elongated skull never owes any of its peculiarities to artificial compression."\*

The view thus taken by Dr. Wilson, which is that the dolichocephalic Peruvian skulls are of natural form, was combated in the "Thesaurus Craniorum." Since that book was printed, I have received ample and perfectly satisfactory evidence as to the truth of the proposition that the longer skulls owe this quality to artificial means. By the politeness of Dr. J. Aitken Meigs, of Philadelphia, I have obtained two Peruvian skulls, which at one period belonged to Dr. Morton's collection, as a specimen of each kind. One of these is brachycephalic, the other is dolichocephalic; but they both present distinct traces of artificial distortion. This fact is conclusive, but, besides, by the politeness of another eminent American man of science, Dr. Jeffrys Wymann, professor of anatomy at Harvard University, this conclusion has been again and still more distinctly established, by an examination of Mr. Blake's collection itself, whence chiefly Dr. Wilson obtained materials for the foundation of his opinion. Dr. Wymann has been so good as to examine Mr. Blake's collection with its present owner, Dr. Warren, of Boston, and wrote me the result on the very day of his visit. I may here introduce an extract from Professor Wymann's letter:

"The upshot of the whole is, the crania do not confirm Dr. Wilson's statement. One of Dr. Wilson's points, in fact it is his chief point, is that the skulls are natural because they are symmetrical, and that it is next to impossible that a distorted skull should be other than unsymmetrical. I have carefully examined eight elongated Peruvian crania with reference to this point, and find that they are quite as symmetrical as any ordinary crania, in fact, neither Dr. Warren nor myself could detect any asymmetry in the general outlines. The mode of employing pressure by bandages would indeed be likely to produce symmetry. Curiously enough, it so happens that the skull represented in fig. 59 of Dr. Wilson's work is the only one in which asymmetry was detected, and in this the most prominent part of the occiput projects farther on the left than on the right side."

This fig. 59 is given in Dr. Wilson's book as a *natural doli-*

\* "Prehistoric Man," 2nd edition, p. 449.

chocephalic skull; but I informed him, on the publication of the work, that it had obviously been distorted by art. Dr. Wymann goes on to say: "Both Dr. Warren and myself were agreed on this point. In addition, this cranium as well as that of the child (figs. 60 and 61) in Dr. Wilson's book, presented the usual appearances seen in artificially distorted crania, particularly in the contraction of the circumference of the cranium between the middle and hinder portions. It seems to me, therefore, that the criticisms of Dr. Wilson's statements in the 'Thesaurus Craniorum', p. 246, are quite correct. I cannot conceive his having arrived at the views he sets forth, and it is rather odd that the skull he has chosen to exemplify his views, should be the one, out of the whole, showing (from his own stand-point) the incorrectness of them."

I do not doubt that the extensive collection of skulls sent by my friend Consul Hutchinson, will afford ample and conclusive evidence upon the questions here discussed.

I may then at once revert to the Peruvian pottery which I have sent for exhibition on the present occasion. Upon this I shall say very little, scarcely more than give a catalogue of the specimens exhibited. It will be understood that this pottery is derived from the same tombs, or *huacas*, in which the skulls were met with. It was the practice of the ancient Peruvians to inter with the dead a great variety of objects. Some were of gold and silver, various implements, some of them of other metals, some of textile materials, and a vast diversity of pottery. From this fact, of the interment of such numbers of articles with the dead, it may be inferred with much probability that the Peruvians were not without some hope of a life beyond the tomb. The pottery indicates considerable skill and ingenuity in its execution, for they did not possess the famous and ancient "potter's wheel", a simple machine above their powers of invention. It is all made by hand, and there is no doubt that, like the pottery of the ancient Britons, it was by the labour of the women's delicate fingers that it was produced. It may be noted that none of the Peruvian pottery is thoroughly baked, so as to fuse the body and to render it very hard. On the contrary, it is more like *terra cotta* than anything else, yet it is baked somewhat more thoroughly than *terra cotta* usually is. A large number of the specimens, indeed the majority, exhibit imitations, more or less successful, of animal forms, sometimes of vegetable forms; the large majority typify the human form. It also occasionally occurs that the forms of the vessels have a grotesque character, and at times give expression to the humour of the people who made them. Skill and taste have been abundantly displayed in the modelling of the almost endless designs of these vessels. Much of the pottery



is of a black colour, from a metallic oxide introduced into the clay; other vessels are made of lighter coloured clays, and all are ornamented in many peculiar styles. Some ornaments, which have been regarded as of classical origin, may at times be found upon Peruvian pottery, such as the *fret* and *scroll*, which were not unknown to the Greeks. These and other accidental coincidences have been employed by some as arguments to support the delusive notion that the Peruvians were of European origin. This kind of erroneous deduction from coincidences has been widely employed in the philosophy of anthropologists, who explain things upon hypothesis. Sometimes it has betrayed even eminent men. I remember being astonished some years ago, to find the very distinguished and accomplished Councillor Thomsen, the founder of the grand Ethnological Museum at Copenhagen, to take this view. Looking at some of the beautiful feather helmets with crests in the museum, made in the Sandwich Islands, he told me that these very helmets proved that the Greeks had had communication with these Islands, for here we saw the Greek crested helmet. A common decoration in Peruvian pottery is produced by placing small grotesque animals in different positions on the vessels. The chief use of most of these curiously formed vessels is considered to have been for holding and for carrying water. As they have handles, they are *water vessels*, articles of vast importance in a climate like that of Peru. From their porous nature they would keep the water cool. A hint has been thrown out that some of them may also have been employed for sipping an infusion of that great exhilarator, the coca (*Erythroxylon coca*), through a silver tube. This is the mode of sipping the *Maté*, or Paraguay tea, but whether the coca be taken in the same way is rather uncertain.

The specimens sent for exhibition are: vessels in *black ware*.

No. 1. An amphora, with two ears or handles. This closely resembles the amphoræ of the Greeks and Romans. It has been elaborated with great care. The marks of the tool are seen all over its surface.

No. 2. A curious water vessel modelled in the exact form of a gourd, with all its natural prominences. Upon one side is modelled the bust of a woman to form the orifice, with her arms and pendent breasts. Her face, with the ears, eyes, nose, lips, and teeth, are all expressed. In the ears are large ear-rings. The head has been modelled as a separate piece, and been attached to the vase afterwards. The potter's finger marks are seen in this attachment. I believe the gourd is a cast from a clay mould taken from a natural specimen, as there is an appearance of a seam along the middle of the bottom. The woman's head is broad, and brachycephalic according to nature. The nose is de-

pressed, like that of a negro, and the hair is represented in tufts; neither of which is correct to nature, but more for the convenience of the potter. This vase is an admirable piece of pottery. The marks of the modelling tool are very obvious on the neck, but totally absent from the gourd, or cast part, which, in fact, supports the view that the gourd is made from a mould.

No. 3. Water vessel, which has a double tube rising up from the belly to join in a single one for the mouth. This combination of the tubes forms a handle. It is neatly decorated on the sides of the upper part with four grotesque birds, having long bills. The depressed field upon which the birds are placed appears to have been formed by an impression.

No. 4. Another handsome water vessel with the double tube for a handle, resulting in the single mouth. This vase is neatly ornamented with three oval prominences, like olives, conjoined by a cord on each side, each of the series of three being equally conjoined by the cord. On the outer sides at the angles at which the tubes rise, a small bird is attached, and a minute monkey at the angle at which the single tube rises. From the marks of seams at the sides, it is probable that the body of this vessel has been made in two halves.

No. 5. Another water vessel, in the form of a depressed globe, which has a prominent spout like that of some teapots. On the opposite side is a grotesque seated figure, having a square head, a prominent nose of a *natural American form*, and a large beard, holding a cup upon his knees. A flat handle is formed conjoining the back of the figure with the spout. [See plate ix, fig. 1].

No. 6. A small *whistling vase*, formed of the body of a bird with long beak. There is a small hole above the bird's head to produce the sound. Wings and feathers are modelled on the sides of the vase.

No. 7. A small cylindrical vase, or urn, with a row of indented ornamentation near the top. This vessel closely resembles some of the ancient British urns. The marks of the tool upon it fully indicate the patient labour by which this pottery has been produced.

No. 8. A vase formed of three conjoined almost cylindrical bodies, which are surmounted by a tube on each side, running into the terminal spout. There is a very minute bird perched at one of the angles of the tubing.

#### *Red Pottery.*

No. 9. A semi-conical water vessel, with a double tubular handle on one side, ending in a tubular mouth. The flat side of the vessel is elaborately decorated with the squat figure of a man standing, holding two long objects in his outstretched arms. This man is a grotesque, has long canine teeth like the tusks of a boar

Fig. 1.



Fig. 2.



Well. Bro<sup>s</sup> Lith. London.



a singular helmet on his head, on the front of which is an animal's face, a cravat round his neck with bands falling down before. This may be intended for a Peruvian deity. The whole is coloured black and white in contrasts. There is a dog-tooth border to this sculpture, which terminates in a grinning head at each extremity.

No. 10. Another depressed cylindrical vase, with a teapot spout. A bird has balanced the spout at the opposite end of the handle. This vase is decorated with red lines, having scroll ornaments between them.

No. 11. A vessel much like a bag. Has two ears, and the neck is ornamented with an animal having four feet and a tail. This vessel is decorated by lines running lengthwise, between which are placed wavy lines. It has been coloured white, the decoration being dark red, almost black.

No. 12. Another bag-like vessel, or jug, ornamented at the neck with portions of a man's head. The ears, eyes, nose, and mouth stand out, and the two hands project from the side of the jug. The nose is *natural*, or truly American.

No. 13. A small neat vessel, in shape resembling the body of a squat man with his hands on his knees. He is dressed in a tunic, which is fastened by two strings upon his breast. The wide spout is placed at the back of the head. The head is modelled with great accuracy, and exactly presents the American nose. The vessel may be regarded as exhibiting the model of an ancient Peruvian. [See plate ix, fig. 2].

No. 14. Two minute vases, forming almost a pair, ornamented with black upon white ground, and having ears at the necks.

No. 15. A neat shallow vessel, which is ornamented outside with black in diamonds upon the red ware, and then white lines between. It has a row of three lines, two black and a white line between, inside the neck. Ornamented outside the rim also. This vessel is remarkable from being made of a red pottery, which has numerous minute particles of gold interspersed in it.

No. 16. Another small discoidal vessel, ornamented in a very similar diapered manner. It has, besides, the fret pattern on the extreme circumference. These two vessels are decorated with much elegance.

No. 17. A painted water vessel with handle much fractured. It is a red body painted white at the upper part, and birds drawn upon it in a brown colour.

No. 18. A hemispherical cup.

Anthropologically considered, this exhibition of specimens of ceramic art proves incontestably that the Peruvian potters worked from nature from the Peruvian people themselves, a people who possessed brachycephalic, broad heads, well exemplified in No.



13, and had a nose which occurs only in its pure form as a race characteristic in America, but upon that continent ranges from a high north latitude down to Peru, if not further south. Since I first observed this peculiar nose, I have long been accustomed to regard it as the true *aboriginal American nose*, which may require a word of explanation. It is an aquiline nose which distinctly differs from the Roman nose, as well as from that of the Jew. It is at once appreciated by the eye, but perhaps is not so easy to describe in words. No one has depicted it so well as Catlin, who spent so many years of his life in delineating the Indians of America. I possess a large work executed in pencil by his own hand, in which he has drawn facsimiles of all his paintings, and this peculiar nose is represented in the men and the women also of all the tribes. It is, as it were, a crescentic nose, beginning to curve at the upper part, and curved uniformly, or nearly so, to the tip. It is a decidedly handsome feature, of which the native races of America have reason to be proud.

This exhibition also throws much light upon the state of civilization of the ancient Peruvians. It shows that although they were highly advanced in many arts, as weaving, dyeing, metallurgy and the ceramic, in which they had acquired a knowledge of moulding, casting and producing a very permanent pottery, ornamented with taste in numerous ways, yet they knew nothing of one of the simplest and earliest inventions of man, the potter's wheel. This fact proves conclusively, as far as any negative can do, that they were an aboriginal people, whose industry was not derived from any people of the old world, but was strictly native and indigenous. Nevertheless, their skill and their taste were unquestionably highly cultivated. We have likewise obtained evidence of a sufficiently satisfactory character, that their aspirations were not bounded by the horizon of this sublunary world, but extended beyond the tomb. This evidence assuredly is most interesting to us as fellow mortals, and engages our sympathies infinitely more than all besides.

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The following paper was read by the author :

*On the PERUVIAN POTTERY sent by CONSUL HUTCHINSON.* By  
JOHN E. PRICE, F.S.A.

WITHIN the last few days I have had the opportunity of inspecting the interesting collection of human skulls, pottery, and other relics, sent over from Peru by Consul Hutchinson to the Museum of the Institute. It is fortunate for us, that the description of this marvellous series has fallen to the able hands of our esteemed President and Dr. Barnard Davis, whose collective labours will

probably embrace all points of interest, and leave but little else to be said concerning the collection. There are, however, one or two minor points for reflection which have occurred to me, especially with regard to the pottery discovered in the graves at Ancon, to which I would briefly direct your attention.

From the information furnished by Consul Hutchinson, there is but little to assist us in determining any date as to these remains. He mentions, however, that some of the skulls were taken from a place of interment, which after the conquest by Pizarro had been rifled by the Spaniards in their search for treasure; it is to be assumed, therefore, that they belong to a period anterior even to the subjection of the country by the Incas, and represent, indeed, some of the numerous aboriginal tribes. From the Spanish conquest in the early part of the sixteenth century, history leads us through some four or five centuries of an advanced and flourishing state of civilization to what is usually termed *Pre-Incarial* times, a period of unknown duration, one of which no literature whatever exists, and which save by a careful investigation of the remnants of sculpture, carvings, and architectural remains, can only be illustrated by such discoveries as the present. Among all such relics, pottery is one of the most useful for comparison, for as illustrations of the requirements of domestic life among uncultivated tribes, there are few things more durable or lasting than those of earthenware. Fictile vessels must have been among the earliest manufactures of man, a necessity indeed of his existence, a want which must be supplied; food must be prepared for consumption, and receptacles for water must be had, even in the most primitive condition which can be imagined; accordingly, the clay usually to hand becomes employed; means are adopted to harden it for wear, and a way becomes opened for the active exercise of human ingenuity in ornamentation and design. A great similarity though exists in the simple forms as fabricated by most ancient nations. The specimens before us, primitive though they be, forcibly remind us of classic types, and yet they are such as required no especial training or education in the higher principles of art to fabricate. A vessel is wanted for suspension, to hold water or other liquid, and to allow of being carried from place to place; the idea, therefore, of such globular vessels with rings on either side the neck, by which to sling or affix to the body, becomes a natural one, and it matters little whether this be represented by those upon the table, by a Roman or mediæval amphora, or the pilgrim's costrel of early English times. I enclose a sketch of two such vessels found some years ago in London, and of about the same dimensions as the largest of those from Ancon; the similarity is apparent.

The pottery, therefore, may or may not date from a remote antiquity; there is nothing about it decisive in this respect, it is roughly made, evidently from the native clays, and imperfectly baked. It has been remarked that there is no evidence of the use of the potter's wheel, and I believe it is pretty generally understood that the Indians of South America were unacquainted with this useful invention,—a contrivance, the origin of which, so far as regards the ancient nations in the east, is lost in obscurity. There seems to be but little attempt at decoration, a few lines in a yellow-tinted pigment appear on some of the smaller cups, and on others there is a white substance somewhat analogous to a glaze. Some such attempt at decoration is usual with early tribes. In Nicaragua the natives glaze their pottery with a kind of varnish lightly rubbed over the vessels, and in Australia and New Zealand it is customary to smear them with melted Kauri gum. The specimens of black Peruvian pottery exhibited by Dr. Davis hardly come within these observations. They seem to belong to a different style of art, are many of them of grotesque form, marvellously light, and of a much finer kind of pottery than the specimens from Ancon. The colour of this blue-black slate-coloured ware may have been derived from some metallic oxide in the clay, but (what would be still more curious and interesting) why should not the Peruvian potters have been acquainted with the principle of suffocating the fire of their kiln at a certain degree of heat, and thus ensure this uniformity of colour? I refer to the smother kilns as illustrated by the late Mr. Artis at the Roman potteries of Durobrivæ.

In the present collection there appears but a small proportion of pottery to the number of the graves which must have been examined in order to produce so large an array of skulls. This is accounted for by Consul Hutchinson, from the fact of the difficulty he found in collecting, packing, and sending a large quantity; he mentions, however, that most of the sepulchres contained pottery. This is a clear illustration of the practice among the Peruvians of interring such objects with the deceased, and resembling in this respect the customs of many other nations. We need hardly refer to its almost universal existence among the Romans. In far off China it has been observed. Nicolo di Cotti mentions it as existing among many of the Indian tribes. The Moldavians also, the Caubees, and many others may be cited. The objects buried usually comprised articles prized by the deceased during life, receptacles for food or wine, clothing, implements of war, with many other things likely to be required on the last long journey. Of such interments, a series in New Granada, Ecuador, Peru, and Chili, with other places in South America, has been well described by Mr. Bollaert, F.R.G.S., with

many curious details concerning the discoveries made by him among the Huacas of that country.

Among the objects on the table are two pieces of netting; these seem the most difficult to reconcile with a remote antiquity. The preservation is so good, they are so well made, and bear so striking a resemblance to such fabrics as used in the present day, that one can hardly imagine them as having been interred for centuries, yet it appears to have been usual for such pieces of network to be included among the objects selected for burial. It would be interesting to enquire how far this has been observed in other nations. With tribes like these, situated near the coast, it may have been thought probable by the survivors that such things would be required by the defunct. In Granada, however, and among the Chilchas of South America, the net seems to have been adopted at religious festivals as a symbol of death, one was cast over the principal musical performer as a reminder, even in times of rejoicing, of the proximity of the last enemy. A strange resemblance here to the custom of placing a skeleton among the guests at a banqueting table in classic times. There are yet many other such matters which might be referred to, for instance, the metal found within the mouths, etc.

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Colonel A. Lane Fox exhibited several specimens of ancient Peruvian pottery.

Dr. Richard King exhibited flattened American skulls and drawings illustrative of the method of flattening employed by certain of the native tribes.

#### DISCUSSION.

Professor HUGHES pointed out that some of the pottery bore evident marks of the potter's wheel, though that may have been of the rudest description; and remarked that it was not safe to infer the non-existence of the potter's wheel from the absence of the usual concentric markings in a few specimens, as it was quite possible they might have been obliterated during subsequent ornamentation, affixing of handles, etc.

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Mr. C. HARRISON, F.S.A. exhibited in illustration of these communications twenty-three photographs, being part of the series of photographs from collections in the British Museum, published at his expense by Messrs. Mansell and Co. These photographs represented various antiquities from Peru, principally terra cotta vases of quaint forms. Among them was a stone seat from the mountain of Hoja, Ecuador; a bronze buckler from Ipijapa in the same country; a remarkable paddle and staff

from a tomb at Yca; stone corbels from the city of Huaman-chuco; and vases from Truxillo, Chocope, Cuzco, Lake Titicaca, and other localities.

The President read the following paper:

**HUMAN SKULL and FRAGMENTS of BONES of the RED DEER, etc., found at BIRKDALE, near SOUTHPORT, LANCASHIRE.** By Prof. GEORGE BUSK, F.R.S., President Anthropological Institute.

IN carrying out the main sewerage of Birkdale, an old land surface deeply covered with blown sand was proved to exist over the larger part of the area sewered. This surface commences in the lowest part of the ground by Fine Jane's Brook as a peat bed, and gradually thins westward into a sort of peaty soil, and upon the latter were found the above remains. The geology of the district is fully mapped out and described by Mr. T. Mellard Reade, F.G.S., the Engineer of the works, in a paper read before the Liverpool Geological Society, November, 1871, entitled the "Post-Glacial Geology of Lancashire and Cheshire."

In cutting the sewer in Gloucester Road, at a depth of 8 feet, the old land surface was reached, and at a point marked X on Mr. Reade's map, plate 1, immediately opposite the shop of Mr. Kershaw, the human skeleton to which the skull belongs was found. It lay on the south side of the trench, and the skull was severed from the rest of the bones by the sheet piling of the trench. The remainder of the skeleton is still in the ground as it would have been difficult to extract it. Mr. Kershaw, who secured the skull and the accompanying fragments of Red Deer bones, etc., has presented them to the Museum of the Royal College of Surgeons.

The skeleton was hard down in the peaty soil bed, and covered with blown sand. It is difficult to estimate its age, but it occurs on the top of a bed, the equivalent of which in Cheshire, is, according to Mr. Reade, the peat bed that overlay the Leasowe skeleton, and above an extension of which are the beds at Hoylake from whence great numbers of Roman remains have from time to time been extracted. The presence of the bones of the Red Deer seems to point to the fact that the skull is of considerable age, and as the blown sand extends inland at least one mile this also leads to the same conclusion. The blown sand itself also shows unmistakable evidence of age from the numerous signs of previous cultivation at various levels intercalated in it, especially towards its eastern or landward margin.

The land surface, of which that in Gloucester Road is an extension, is shown in section *d* to *c*, plate 4, of Mr. Reade's work, and always rests upon either blue laminated marine clay,



or blue silt (on the *latter* in Gloucester Road). These underlying beds, which occupy in Lancashire an area of about seventy-five square miles, have been denominated by Mr. Reade, the "Formby and Leasowe Marine Beds." The antlers of the Red Deer have been found in these beds *underlying* the old land surface at points 1 and 2, plate 1; and at the same places various marine shells occur.

In the explanatory section, plate 1, the relative positions of the Birkdale and Leasowe skeletons are marked,—it is, however, necessary to bear in mind that the recent silts, "coloured green," are not present at Birkdale at the point where the skull was found, and that there, as before described, the upper bed consists wholly of blown sand resting directly upon the old land surface.

The skull found in the excavations of Wallasey Pool (now in the Liverpool Museum) is smaller than either the Birkdale or Leasowe skulls, but is in character more like them than are any of the other skulls in the Museum. The correspondence between the Birkdale and Leasowe skulls in measurement is remarkable, the former has, however, a more arched parietal.

The skull is very heavy, but this may partially arise from the infiltration of peroxide of iron which is common to the blown sand. Other animal bones have been found on the same land surface at various points, and generally are coloured blue in places by a deposit of phosphate of iron. The skull, it is perhaps necessary to state, was washed and "cleaned" by Mr. Kershaw; the bones were named by Mr. Thomas J. Moore, C.M.Z.S.L., Curator of the Liverpool Museum.

The meeting then separated.

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APRIL 22ND, 1873.

Professor BUSK, F.R.S., *President, in the Chair.*

THE minutes of the previous meeting were read and confirmed.

J. H. LAMPREY, Esq., was elected a corresponding member; GEORGE HARTLEY, Esq., H.B.M.'s Consul at St. Paul de Loanda, was elected a local secretary for Loanda.

The following presents were announced, and the thanks of the meeting voted to the respective donors:—

## FOR THE LIBRARY.

- From the SOCIETY.—Proceedings of the Royal Society, vol. xxi, No. 143.
- From the EDITOR.—La Revue Scientifique, Nos. 40, 41, and 42, 1873.
- From the EDITOR.—The Food Journal for April 1873.
- From the SOCIETY.—Bulletins de la Société d'Anthropologie de Paris, vol. vii, No. 4.
- From the EDITOR.—The Sanitarian, vol. i, No. 1, April 1873.
- From the SOCIETY.—Proceedings of the Society of Antiquaries of London, vol. v, No. 6.
- From the SOCIETY.—Mémoires de la Société des Naturalistes de la Nouvelle Russie for 1872-3.
- From the EDITOR.—The Spiritualist for April 15th, 1873.
- From the AUTHOR.—The Identity of Israel with the English and Kindred Races. By Dr. Protheroe Smith.
- From the SOCIETY.—Journal of the Royal Asiatic Society, vol. v, Part 3.
- From the ASSOCIATION.—Transactions of the Social Science Association, 1872.
- From JAMES BURNS, Esq.—Human Nature for April 1873.
- From the INSPECTOR GENERAL.—Report on the Census of Bengal, 1872. By H. Beverley, Esq.
- From the INSPECTOR GENERAL.—Report on the Census of New Zealand, 1871. By John B. Bennett, Esq.
- From the EDITOR.—Nature (to date).

The Director read the following paper:—

RELIGIOUS BELIEF of the OJIBOIS or SAUTEUX INDIANS, resident in MANITOBA and at LAKE WINNEPEG. By A. P. REID, M.D., L.R.C.S.Edin., etc., etc., Professor of Practice of Medicine, Dalhousie College and University, Halifax, Nova Scotia, Canada.

At the request of my friend Sir Duncan Gibb to send a communication on Indian customs, I thought the subject I have chosen would be more appropriate than details of their daily life, which are for the most part very similar in all tribes, and have been again and again described by travellers. Their religious opinions, on the other hand, have been much less referred to.

I spent the greater part of the years from 1860 to 1864, amongst ten tribes, stretching from Manitoba\* to Vancouver

\* Pronounced Man-e-tau-bah (the last *a* is pronounced very long, the *o* short).

on the Pacific, but in ordinary intercourse it is very difficult to find out their ideas of religion, they being reluctant to talk much on this subject to strangers. I lived among the Sautaux (resident at Lake Winnipeg) eight months, and during that time picked up the material of the following description.

The Sautaux originally belonged to the Lake Superior country, but the old North West Fur Company (prior to the Hudson's Bay Company) induced many to emigrate to Lake Winnipeg, as they were a more active race and better hunters than the Swampee tribe, who originally occupied that district, and who have to a great extent been displaced by the new-comers. The chief tribes in Manitoba and on the British prairie are the Assiniboines and Crees, who rarely own a canoe, and live on the prairie. The Sautaux or Ojibois, and Swampee rarely own a horse, confining themselves nearly altogether to the fishing and hunting on the lakes in their immediate vicinity.

On first going to live amongst them, it appeared to me strange that the Indians, especially the younger men, were rarely called by their Indian names, and on asking their name they said call me "Niche" or "Nich-e-wah" (Indian word for brother or friend) or "bear" or "John" or "Tom" and such like, and it was very difficult to get any other appellation from them. In time I found that there were two reasons for this,—Firstly, many were averse to be known to the whites by their appropriate names,—secondly, that they had no name, which I will now explain.

It is held that the name is in some way prophetic either of the man's station in this life or his future life, and was not assumed until this condition became known, which took place at manhood after the following ceremony had, to some extent, lifted the veil which divides the known from the unknown.

Each young man, at a chosen time, spent a week in feasting—gorging himself with all he could swallow. He then picked out some quiet place, where he would be neither observed nor disturbed, to sleep, or as the Indians say, to dream. During this period they neither eat nor drink, for doing so would render their efforts vain.

The sleep lasts from three to seven days owing to the endurance of the subject, and during this time the Great Spirit comes to the Indian in the form of a dream, and this makes known to him that portion of his future which is to be vouchsafed. The longer the man can abstain the more pleased is the Great Spirit, who does not visit him until his fortitude is about giving way, when he sinks into the *dream*, and in spirit sees his future going on from this life even to that after death.

The greatest number can only fast three or four days, and they cannot get a glimpse of what is in store for them in the spirit

world, but now and then a man fasts seven or eight days, and the great Spirit as a reward for his endurance may show him a high station in the land of the hereafter.

The Indian goes back to his tribe after the dream (looking much the worse for his abstinence), relates to them what the Great Spirit told him, and assumes a name explanatory of this destiny.

An old fellow I was well acquainted with, rejoiced in the cognomen of "*Co-se-se-kan-eh-kway-kaw-po*," signifying "The man who standing up his head reaches the heaven or sky." He had fasted and slept eight days, at which the Great Spirit was much pleased, and made known to him that though he should not occupy any position in this world or be much looked up to, yet after death he should make him the ruler-in-chief—accountable to himself alone,—of the tract of country, bounded by Lake Winnipeg on the east, and the lakes Manitoba and Winnipegosis on the west (about 200 miles long by from 25 to 58 wide.) The old fellow firmly believed in this destiny and bore all the ills of life without complaining. His opinions were but little respected, in fact he was both lazy and a drunkard, but what need had he for position in this world when such a brilliant future awaited him?

Another was called "*Caugh-ske-kaw-bunk*," signifying "The rays of light before the sun appears on the horizon." The Good Spirit informed him that he was to be a leader, a guide to his tribe, and was to give them information, that like the first rays of light would be very circumscribed in quantity, but would gradually increase and spread with effulgence over all the tribes in coming time. He was to the Great Spirit as twilight to daylight, in fact a "*Medicine Man*." He had fasted a long period, I did not find out how long. He was extremely modest, and said but little of what he could do, but from the half-breeds I learnt that he had accomplished a greater feat than the Davenport brothers of a few years ago, though similar in kind. He might be tied up with cords in any way, and then rolled up in a thirty fathom net, placed in the medicine tent alone and closely concealed; in a short time cords, net, and all would be thrown out without a knot untied, and he would appear in a state of profuse perspiration. During the time he was in the tent, it was surrounded by the Indians at a little distance, who kept up a great tumult, beating sticks, kettles, anything to make a noise, for by that means they induced the spirits to come to the aid of the medicine man; others say, to keep the evil spirits off while the good spirits got him disentangled. This is a feat that, from the testimony of the half breeds, several medicine men have performed, but it is never done when strangers to the tribes are present, unless once long

ago, when, as report says, a famous magician performed the feat at the urgent request of some of the Hudson's Bay Company's magnates, and on being very closely pressed as to an explanation of how he succeeded, at last said, that "by supernatural aid he changed himself into a snake, and of course crawled out without having to undo the knots." This being done, he changed himself back again to a man, but it took a great effort which was why he was in such a profuse perspiration. Comment on this is unnecessary.

I found old Caugh-ske-kaw-bunk a very decent and reliable man, and we were on such good terms, that on learning that I had no relative in that territory, he offered to be my foster father. On speaking in commendation of him to one who had been long acquainted with him, and with whom he was friendly, I was told he was an old rascal, and that he had only been deceiving me, trying to get what he could out of me. It is right, however, to speak of a man as you find him, and I found the old man reliable, more so than any other I knew.

Since the Indians have been mixing with the whites, many of the younger ones are either leaving off the customs of their forefathers, or practise them in secret, which latter I believe to be very common. They are very sensitive to ridicule, and knowing that the whites and half-breeds, being Christian, are unbelievers, they are extremely diffident to converse about, or in their presence perform, any religious ceremony.

As to the belief in a hereafter I found their opinions to be very decided. Their spirit-land is an exact counterpart of the present, but is not visible unless to the spirit eye—everything, trees, animals, birds, guns, blankets, canoes, etc. etc., as well as mankind, that have been, or may be in existence on *terra firma*, have or will have the spirit form *in futuro*. A man appears; at first he is small and gradually attains maturity, he dies and decays, but his spirit form goes to the spirit land. By parity of reasoning, a tree, an animal, any living thing going through the same circle of events, has a similar futurity.

A gun, a blanket, a canoe, in course of time will rot away and disappear from the visible earth, as much so as a man; in fact it dies, which accomplished it appears in the invisible world, similar in every way to what it was previously, but in the spirit form and indestructible; in fact, to be owned and used in the spirit world by the spirit Indian in precisely the same way and for the same purpose as when in this world. Hence the reason why the dead man's implements of the chase are buried with him; it is with some tribes customary to burn the deceased's personal property at his burial, so that he may have the sooner use of them. Others prefer allowing them to decay naturally; as it is supposed



they are not immediately wanted after death, nature having all things wisely arranged.

The world is to the Indian an *imperium in imperio*, the spirit world coexistent with, both in time and place, the present world. Lakes, rivers, and mountains are not born, do not die, do not decay, hence the spirit and the mortal look on the same earth, enjoy the same, and live on the same lakes and mountains. The spirits are always present with us but we cannot perceive them.

When a man dies he journeys for a certain time, thirty to sixty or more days (ideas on this subject being divided) before arriving at the confines of the happy hunting ground.

Here he finds a deep river that must be crossed; he plunges in. If he had been a good man in this world, he finds no difficulty in making the traverse, but if wicked, he comes out on the same side as he went in, and it matters not how often he tries, he always comes out on this wrong side.

For the period of time before he reaches the river, he must depend for sustenance on the friends he has left in this world, and they, every time they eat for a number of weeks after his death, throw a portion into the fire, where being consumed its spirit form goes to nourish the dead man on his journey. If he have no friends, then his pilgrimage is harassing, and he suffers starvation for the time, though he cannot die. He, in fact, passes through the *hell*, or place of punishment, before the abode of bliss is reached.

I have frequently seen Indians, always, before eating a piece of food, throw a morsel into the fire, and so strong is this belief that I have seen the first one of the old men before alluded to, much as he liked the fire-water, or whiskey, and greedy as he was for every drop he could get, throw the portion first poured out into the fire, and as he watched it blaze and wafted away, he was reconciled with the thought that his departed friend was the first to partake of the delicacy. So it is with meat, or bread, or tea; but a very small piece is so disposed of, for the spirit does not require much to support him. Some of the tribes that live on the prairies are in the habit of killing the favourite horse and burying it near the Indian, so that the spirit may be mounted at the commencement of his journey.

A story is related by McLean, in his book, "Twenty-five Years in the Hudson's Bay Company's Service", that the master of one of the posts in British Columbia was a very great friend of the old chief in that locality, and they spent much time in each other's society. The old chief died, and on the first opportunity, the chief's son killed the master of the fort with the laudable intention of providing his father in the spirit world with his old and valued friend, to solace him in his journey, and prevent any break in their intimacy.

It may be well for many of us that the Christian religion is so much less explicit in its teachings of the future state.

The Indians believe in many good and evil spirits, but there is one *Great Spirit*, the supreme chief, that governs and orders the universe, who is omniscient, omnipresent, and the author of all good, with many subordinates who govern districts under him.

A chief in this world, if he be a good and brave man, has a preferred chance for honours in the ethereal kingdom, and over his own nation. As to the evil spirits, I never heard that anyone is supposed to have predominating power. The heaven, or happy hunting ground, is a country having neither heat nor cold, neither hunger, nor thirst, nor pain, nor quarrelling, nor stealing, nor war, nor scarcity of game of any kind.

The spirit Indian, with spirit gun, or spirit bow and arrows, flies like the wind in his chase after the spirit game, through the spirit forest, shoots the spirit moose, which falls over as if killed, and then the Indian, taking what he wants of him, (the choice piece), goes off to the attack of something else.

The spirit moose that was shot, as soon as the Indian disappears, jumps up and is off again the same as if nothing had happened, to again reward some other spirit Indian with his needed recreation and pleasure; hence there can never be any scarcity of game, and the more so since all the moose killed in this world take on the spirit form.

These Indians have a curious superstition regarding the bear; they will not permit a dog to eat any part of its flesh, or touch the bones, and all the waste portions of this animal are thrown into the fire. On inquiry I could not elicit anything more than that if its flesh be used in an unhallowed manner, the subsequent chase of this animal will be unlucky.

In addition to the sport of the chase, the *Great Spirit* has many ways of recompensing the brave and good Indians when they are all assembled in harmonious council, presided over by the ruler of all things.

Their hell, or place of future punishment is exactly the reverse of the happy abode. There is no game, no pleasure, excessive heat and cold, war, fighting, and above all, a continual starvation by both hunger and thirst not to be avoided, never to be appeased even by a prospect of death.

In addition to this is a species of refined torture; the bad spirits can congregate along the bank of the river which separates them from the abode of the happy, and see the good spirits enjoying themselves in every conceivable way with a bright sun shining, while they are in the dark and frozen with cold, the narrow river alone being the barrier, so that all they have to do is to swim over

but let them attempt it ever so often and they always come out on the side of misery more chilled and wet than before making the effort, while seeing new comers jump in and land safely on the happy side.

To give the good Indian a sharper relish for the bliss in store for him, he has had to pass the days, before referred to, in journeying through this country for a period after death, which is supposed to be shorter or longer as he has been more or less deserving. When he arrives at the river, he sees its shore crowded with the unhappy spirits vainly attempting its traverse, he makes his attempt, succeeds, and looking back must be overjoyed by his good fortune. He is immediately surrounded by his departed friends, who welcome him to the happy hunting grounds, and convoy him in honour and triumph to a council with the Great Spirit.

He has now arrived in a new land with new customs, and it takes him some time to get used to it. His implements of the chase may not have yet arrived, and he must depend on the bounty of his friends until such time as his own effects come to hand, or, he becomes in accord with his surroundings.

If in the mortal world he had injured anyone in the spirit world, the aggrieved party can command justice, and the new comer may thus be inconvenienced, but there is no punishment for any crime committed outside of his own tribe.

When an Indian dies, his canoe, gun, blanket, and any other thing considered useful, are deposited at his grave, and very often if his own gun or blanket be inferior or absent, a friend will make up the deficiency.

A son will often buy a new gun or blanket, and leave it or them at his father's grave, with food as well, so that his parent shall want for nothing in the new land.

The things at a grave, valuable or not, may remain exposed until decayed, for a theft of this kind was unknown. I was at first surprised that these things remained unmolested, for they are not watched, and the Indians are well aware that there are amongst them those that are not good; but, say they, no matter how bad an Indian may be, or how much inclined to steal, these will be left untouched, for they are sacred to a spirit in the spirit land. Because the thief must die, and even if he succeeded in crossing the river, he was met by the injured spirit in the new land, and incommoded in any way that spirit desired, for it could then get perfect satisfaction out of him.

Such is a brief outline of the ideas picked up among the tribes referred to, that I remained longest with.

I had often been at a loss to understand why the Christian religion was so slowly adopted by them, and so soon abandoned after adoption, for I knew lots of Indians, Christian while in the

settlement, that were pagan as heretofore after they returned to their hunting grounds, and carried out all their old rites. But on better acquaintance, I could perceive that the Christian religion to such minds did not hold out as clearly perceived advantages as the old one.

The Christian heaven is a mythical abode of happiness, the happy hunting ground a delightful home, that the dullest intellect could perceive and would try to attain. It pointed out real rather than imaginary bliss. Their hell is a piece of perfection as a hell to the Indian mind and experience.

Their ideas of medicine, or the cure of the sick, are mixed up with their religious belief in spirits, and I never saw or heard tell of any system in their treatment, other than some rather rude means to exorcise the spirit. Their use of herbs is limited, and their surgical skill is very simple.

A charm is one of their potent remedies.

#### DISCUSSION.

Sir DUNCAN GIBB expressed his satisfaction at having been the means of inducing his friend, Dr. Read, to contribute a paper to the Institute full of original observation and carefully noted facts concerning the Indian tribes in a part of the country on the confines of the civilised portions of Canada. From his youth upwards, he, the speaker, had been familiar with the Indians who were settled at Canghnawanga, near Montreal, the Lake of Two Mountains, Three Rivers, Quebec, and some other places; he had gone out fishing, shooting, and boating with them; had purchased various articles of manufacture from them as objects of ornament or curiosity, and he could say that in a knowledge of their habits and customs during a period of over twenty-five years, he was not aware of any superstitions of any kind existing among them now; for in the course of generations, since they became Christians, shortly after the visit of Jacques Cartier to the Island of Montreal, in 1534, now nearly three centuries and a half ago, whatever they may have inherited in regard to religious belief from their forefathers, had become wholly eradicated, and they were as good and sensible in their general views of a future state, now at any rate, as any of their neighbours, the French Canadjans. The observations of his friend the author, therefore, conclusively showed that Christianity had not as yet reached the Indian tribes on the shores of Lake Winnipeg, else the peculiar beliefs they entertained, so well described by the author, would not be so vivid. He trusted that the Institute would receive further contributions from his friend, who could be safely relied upon for the extreme accuracy of all his statements.

The Director read the following papers :

ROCK INSCRIPTIONS in BRAZIL. By J. WHITFIELD.

[With Plate X.]

THE rock inscriptions were visited in August 1865, during an exploring expedition for gold mines in the province of Ceará. Several similar inscriptions are said to exist in the interior of the province of Ceará, as well as in the provinces of Pernambuco and Piauhý, especially in the *Sertaões*, that is, in the thinly wooded parts of the interior, but no mention is ever made of their having been seen near the coast.

In the margin and bed only of the river are the rocks inscribed. On the margin they extend in some instances to fifteen or twenty yards. Except in the rainy season the stream is dry. The rock is a silicious schist of excessively hard and flinty texture. The marks have the appearance of having been made with a blunt heavy tool, such as might be made with an almost worn-out mason's hammer. [Plate X.]

The situation is about midway between Serra Grande or Ibiapaba and Serra Merioca, about seventy miles from the coast, and forty west of the town Sobral. There are not any indications of works of art or other antiquarian remains, nor anything peculiar to the locality. The country is gently undulating, and of the usual character that obtains for hundreds of miles extending along the base of the Serra Ibiapaba.

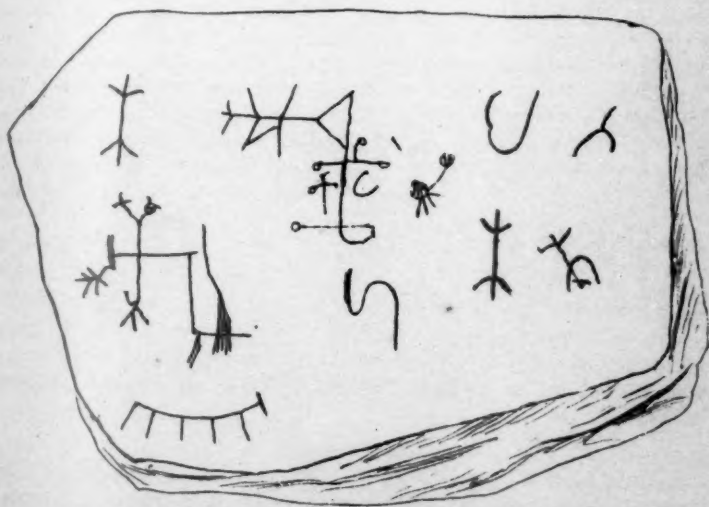
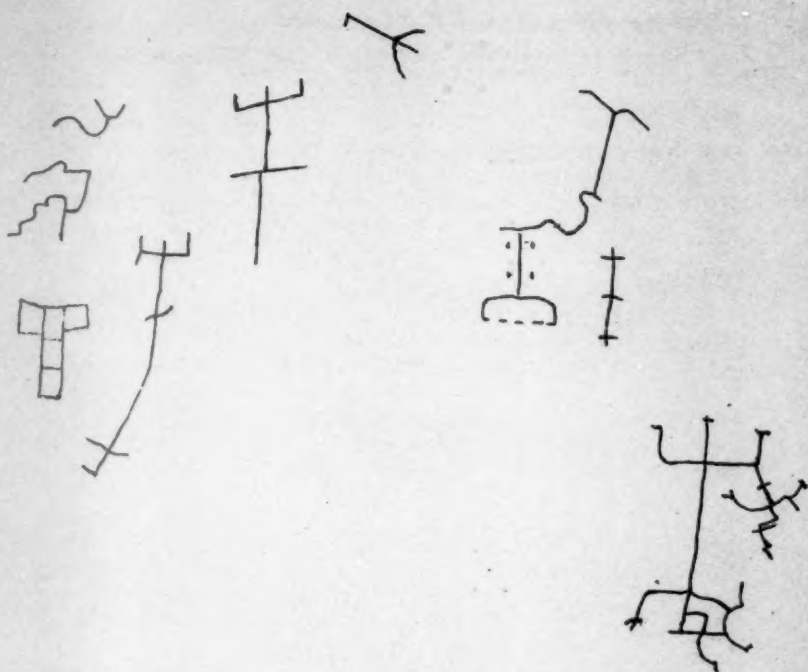
The native population attribute all the "Letreiros" (inscriptions), as they do everything else of which they have no information, to the Dutch, as records of hidden wealth. The Dutch, however, only occupied the country for a few years, in the early part of the seventeenth century. Along the coast, numerous forts, the works of the Dutch, still remain; but there are no authentic records of their ever having established themselves in the interior of the country, and less probability still of their amusing themselves with inscribing puzzling hieroglyphics, which must have been a work of time, on the rocks of the far interior, for the admiration of wondering Indians.

The finding of these inscriptions in the interior of a country which has been but recently occupied by Europeans—but for ages inhabited by the ancestors of the fast-retreating Indian races of the Mongolian type—leads to the supposition that they are the work of the older inhabitants, the antiquity of which may not be inferior to, or less interesting than, the curious records of Mexico and Peru.

#### DISCUSSION.

Colonel LANE FOX said, that by a comparison with other rock inscriptions from the same locality, it appeared that the figures repre-





*1/2 Nat size.*

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ROCK INSCRIPTIONS IN CEARÁ, BRAZIL.



sented men and animals, the arms and legs of which were here shown in straight lines. By comparing these with more detailed representations of the same forms, it will be seen that a gradual degeneration has taken place from the more perfect figures in which the outlines of the features may be traced.

The PRESIDENT remarked that it was interesting to find that markings of apparently very similar kind to these Brazilian rock inscriptions, have been met with in the south of Spain on the sides of caverns, but as it would seem not incised, but executed in a red bituminous paint, apparently with the point of the finger. A good account of these curious hieroglyphics will be found in the "*Antiguedades Prehistoricas de Andalucia*" of Don Manuel de Gongora y Martinez. Madrid, 1868.

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*On the DANISH ASPECT of the LOCAL NOMENCLATURE of CLEVELAND.* By the Rev. J. C. ATKINSON.

[ABSTRACT].

It is a noteworthy fact in connection with the ancient history of Cleveland, that a Roman road ran through its easternmost portion, and, beyond question, terminated only on reaching the coast. There is also reason for thinking that a second Roman road, having nearly the same starting point as the other, was directed through the more westerly portion of Cleveland, and with the same apparent destination for the coast or some point near it. It is further remarkable that as at Raven Hill, near Robin Hood's Bay, a Roman fort is known to have existed almost on the very verge of the sea-cliff, so at Rockcliff, near Saltburn, with a sea-view commanding the Tees mouth inlet on the one side, and the coast line beyond Staithes and Runswick on the other, and again at Dunsley overlooking the entire Whitby bay, there are convincing reasons for assuming the existence of works implying permanent Roman occupation. There may be no absolute proof that these works were look-out stations, or that there was any connection between the military roads just named, and the works themselves. But the facts remain, and it is impossible to admit them to our consideration, and avoid the conclusion that the roads and the stations had a mutual interdependence.

But besides these testimonies of Roman connection with, and interest in, ancient Cleveland, there are, or have been until recently, other remains of the same description, and with the same general and marked significance. Thus Dr. Young, in his "*History of Whitby*" (ii, p. 699,) refers to a Roman camp "situated on the brow of the hill beyond Waupley, on the road to Guisborough, fourteen miles from Whitby"; of which he states pre-

cisely that it had measured—for at the time he wrote it was undergoing demolition—"215 feet east and west, by 185 north and south; with a trench near 30 feet over": while besides this, another, some remains of which are still traceable, and which has given a name to the small farmsteads "High Burrows" and "Low Burrows" closely adjacent, was constructed on the line of the more easterly of the two roads mentioned above, and at a point not far from the commencement of the decided slope of the great bank forming the southern side of the Esk valley.

But apart from these remains of Roman connection and interest, which are all evidently or presumptively military in nature and purpose, but very few matters testificatory of Roman occupation in Cleveland have ever been met with. A few coins picked up here and there in the district form nearly the entire treasure-trove of interest to the Archæologist in search of Roman traces. When we couple with this circumstance the historical fact that at the time of the Norman survey no small proportion of a considerable moiety of Cleveland was overspread with forest, morass and bog, a fact which meets with superabundant confirmation from a variety of other facts ascertained, or ascertainable almost to within the present century, and bear in mind that the historical fact in question was such, notwithstanding some five or six centuries of Anglian and Danish occupation, it seems almost impossible not to come to the conclusion that the Roman interest in Cleveland was one mainly, if not exclusively, of a strategical or military description.

But even further than this: from the continuation of the military ways in the direction of the shore, one of them evidently terminating at the shore only, and from the existence of the posts on the very verge of the shore, and in positions commanding such an extensive outlook, the further conclusion can only be that the immediate source or origin of the Roman interest in Cleveland was distinctly external to its confines, and not internal, or connected with any population then occupying the district.

But this is a conclusion which points directly to something more than a possibility that the coasts of Cleveland were, during the period of Roman occupancy, not only open to, but sought in, incursion or attack from the sea; in other words, that expeditions not only presumably, but almost necessarily Teutonic, and having plunder for their object, were no novelty even in the fourth century, and possibly earlier yet. When ships, such as those of the Veneti described by Cæsar, were in existence at so early a date, and again when vessels, such as those discovered in the Nydam and Thorsbjerg moss-finds, were in use, and were sailing, moreover, to ports certainly a long way removed from their own Jutland harbours, there can be no question, quite apart from the

distinct assurances of history, that the coasts of northern Britain offered an inviting field for predatory ventures from the opposite shores, long before such ventures became systematised and directed to a wider and more definite end.

And if so, where is the improbability that attempts at settlement or detached colonization, analogous to those which seem to have resulted in fixed occupation by Teutonic settlers further south, even antecedently to Cæsar's time, may have been made in very early times in a district which presented such convenient means of access from the sea as those afforded at Tees mouth and—to say nothing of lesser intermediate landing places—in the haven presented a few miles further south by Whitby Bay?

All this is certainly mere matter of speculation; and of course it is more conjectural still to what extent any such immigration, or early tentative Teutonic settlement, may have proceeded. It is sufficient at present to suggest the possibility of such efforts, and to direct attention to the fact that there are circumstances which seem not only to indicate such possibility, but, even of themselves, to introduce a distinct image of it to the imagination.

But whatever may have been the date of the earliest Teutonic settlements in north Yorkshire, it is further a question admitting of no little in the way of conjecture or speculation, to what extent the face of the Cleveland country was actually taken up by the inflowing tide of invaders and settlers in the fifth and sixth centuries. There is no doubt that, at a much later period, in several of what are now the richest and most inviting districts in North England, as also most important in both civil and ecclesiastical relations, large tracts were, at a period very much subsequent to the date assigned for the accomplishment of the English conquest, still quite unappropriated, or at the least open to the colonising proceedings of some straying community in want of a homestead. And it may well have been that in such a district as much of Cleveland must have been at the early period referred to, many and considerable tracts which were two or three centuries later allotted, more or less cleared, and made the sites of active occupation and permanent abode, were, from the nature of the case, allowed, nay even necessitated, to remain at least unimproved, if not also unappropriated. In other words, the natural clearings in such a forest-grown country, as this district undoubtedly was, would naturally or of necessity be preferred to spaces which required great and continuous labour before they could become available for settlement.

There is no deficiency of such tangible evidence of the presence and influence of the Danes in Old Cleveland, as is left impressed upon the language and nomenclature of the district, and hardly less strikingly apparent in the personal names, not only of the



ancient owners, but also of later dwellers in its villas and hamlets. Thus the Domesday list of owners, besides the English names Aldred, Edmund, Uctred, the Celtic names Magbanec, Gospatric, and the apparently French name Lieuenot, includes the following, unquestionably those of Northmen, all of them :—

Altor	Norman
Alver (Alfr)	Orm, Orme
Archil, Archel	Walteof
Aschel	Siunard
Carl	Sunen
Gamel	Tor
Hauuard	Torchel
Leising, Lesing	Turogne (Thorarinn)
Ligulf	Ulf
Malgrim	Ulchel

Then the names of places yet extant, or extant in mediæval times, give up the following list :—

Alfgerdr	Hroskell
Arnodr	Ingialld (three of the name)
Asulfr	Ivar
Basi or Besi	Kole, Kolli, or Kollr
Baldr	Ketell
Bergulfr	Leifr
Bjarnvardr	Mul or Muli
Björn	Norman
Bolli	Orm
Buthar	Steinn
Dane	Sveinn
Esi, Esa, or Asi	Thorvalldr
Gautr	Toli
Grimr	Uggr
Grimkell	Uglebard
Gunnar	Vesteinn

To these may be added the following very imperfect list annexed, compiled from ancient documents, Parish Registers, and still existing personal nomenclature :—

Asi (Ace, Aza, Aze, Asza). W. R.*	Farman. W. R.
Ani	Gamel. W. R.
Askell	Gill
Arkell	Goda. W. R.
Arngrim. W. R.	Grimkell
Arnegrimasune. W. R.	Havelok
Avalidr	Herwalld. W. R.
Audun	Horn
Bardr (Bardh, Barde, Bardth). W. R.	Keld
Bardulf	Lax
Blacher, Blaker. W. R.	Leisingr. W. R.
Brandr	Litster
Brogi (Brok, Brock). W. R.	Orm. W. R.
Brun, Bruni. W. R.	Osbjörn. W. R.
Dane. W. R.	Osgod. W. R.
Faganulf. W. R.	Othun, Outhan, Outhen. W. R.

\* "Whitby Register or Abbot's Book."

Outhengar. W. R.  
 Baghanald. W. R.  
 Ragnar. W. R.  
 Rafnkell. W. R.  
 Ranulf. W. R.  
 Ramkell. W. R.  
 Raa or Ra  
 Rawland  
 Ribald  
 Richer  
 Rigg  
 Rowntree  
 Scarth

Sigurth. W. R.  
 Svartkollr. W. R.  
 Sveinn. W. R.  
 Sveinbjörn  
 Teitr  
 Thordis  
 Thorfinar. W. R.  
 Thorgils. W. R.  
 Thorkell. W. R.  
 Thorketell. W. R.  
 Tosti  
 Ugle

There is also another class of names of marked character prevailing greatly in the district, which ought not to be passed over quite without note, particularly as not a few of them are of a singularly characteristic description; I mean the names with the termination *son*. The entire list would be too long for insertion, but the following are, among others, very suggestive:—

Allason, Allison, Allatson (O. Dan.	Jordison (O. D. Hjörtr, or Jörd. Cf.
All or Atli)	Jardarsonr, a synonym of Thor)
Anderson (Dan. Anders)	Lockson (O. D. Loki or Loke)
Annyson (O. D. Ani)	Peirson (O. D. and D. Per, Person)
Colson (O. D. Koli, Kollr)	Towlson (O. D. Toli)
Collison (O. D. Kolli)	

The evidence afforded by the names of places in ancient times as preserved in Domesday, and in writings of more mediæval date, and their comparison with those of later date, seems to show that all the names ending in *um* are clearly datives plural, and about the most of them there can be as little doubt as about the names of places in *um*, found in almost every page of *Landnámabók*.

Arusum, like Upsala, is a name found on the other side of the North Sea; and about Lithum (O.N. *hlith*, a slope, mountain side), which, with its compounds, occurs three different times, it is quite worth notice that that district of Cleveland in which these names occur is still, by those who live at the higher level of the Dales lying to the south of it, spoken of customarily as "the low *side*." With such instances as these to guide us, and with the confirmation of the prevalent nomenclature of the district, we need not hesitate about attributing Morhusum, Locthusum, Cotum, Toscotum, etc., to a Danish, rather than to an English origin. Yarm, in its old form, or as Jarum, bears a singular resemblance to a place-name in S. Jutland, the phonetic form of which is also written Jarum, the true form being Hjar-dum, contracted from O.W. Hjardaheimr. Aclum, Laclum or Lelum, Ergum, and Thackrum are doubtful, and it is possible two of the four originally involve the ending *holm*.

We find Domesday Upesale, Upeshale, now Upsal; Wercesel,

Wercheshala, now Worsall; Ghinipe, now Hawsker; Breche, Brecca (supposed by Young to be Bracken-ridge, near Whitby—but compare Brekka, Fagrabrekka, that is, Fair-slope, both local names in Landnámabók; Semer, Semers, now Seamer; Mersc, Mersche, now Marske; Mediæval Traneholm (Trenholm,) Simundholm, Sletholme, Smetheholme (not to mention more modern names involving the same suffix, to the number of forty and upwards); Carling-houe, Glaphoue, Potto, Sexhow, Stanghow, Tidkinhoue, Walpelhoue (now Waupley), and many others; Renneswyc, Reneswyk, Runeswik (now Runswick), Katewik, Saltwyk or Saltwik, Westwyk, Blawyc; Hellewath, Whawath, Sandwath, Smawath; Gunregate or Gunnergate, Lardegate or Laddegate, Lundegate; Burstadgile, Buscogill, Ragill, Saltergill, and many others; Slechetes, Slectes, Scleythys, Slehtes, now Sleights; Tiviresik, Storthesike, Totesick, Fowlesike, Luscheldesik, Brakedalsic, with the more modern Holesike and Howlsyke; Halmerige or Schalmeryg, Leaserigg, Rethrig, Cockrig, Brockrigg and others; Kerling-keld, Helewaldesceld, Houtekeld, Dunsildceld, etc.; Tranmire, Waw-mires, Punder-mires, etc. etc.; which all go to swell the same long list.

On the whole, then, we find fifty names in *bi*, thirteen in *thorp*, twelve in *thwaite*, thirty-one in *dale*, fourteen in *um*, seven in *grif*, eight in *clif* or *cliue*, three in *borg* or *burg*, besides about fifty-five not specially classed, of which hardly one in fifty admits of any doubt, from the early date of their occurrence, of their essentially northern origin; while it will be well to bear in mind that there is further a very large number of names belonging to the classes in *dale* and *clif*, and to the groups in *rigg*, *sike*, *holm*, *keld*, *sty*, *wyke*, *wath*, etc., which are only not brought into the enumeration because documentary proof of their imposition previously to mediæval times chances to be lacking.

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REMARKS about the CONSECRATION of the SERPENT as an EMBLEM  
but not an OBJECT of WORSHIP among the intelligent DRUIDS.  
By JAMES HUTCHINGS.

[ABSTRACT.]

THE author pointed out the growing interest in ancient history, tradition and archæology, and the necessity of intelligent investigation of all subjects of this nature. That it is an error to speak of the serpent in systems of worship without taking into con-

sideration its relative and antecedent signification. Hence mere symbols had been mistaken for the things signified, and objective emblems had been assumed as the manifestation of general fetichism. That the Rev. J. B. Deane's work on "The Worship of the Serpent" was, notwithstanding its great learning, founded on a series of assumptions and foregone conclusions, and therefore much beside the mark, in the true meaning of the serpent in the forms of ancient worship and pantheistic systems of past ages. That the same logic applied to the symbols or emblems of Christianity, the cross and crucifix, would be intolerable; and equally so to suppose that the relation in Genesis about the serpent tempting Eve, as the origin of the emblem of the serpent in all the forms of religious worship in all ages and nations. That the serpent was an emblem of the life giving and healing influence of the infinitive spirit of the universe; and, if it had not been so, Aaron and Moses committed a grave mistake in using it as the means of curing the children of Israel. As an objective god, their doing so was the direct way to confirm the Jews in their tendency to fetichism; and that in no proper sense can the idea of Satan be made to underlie the scriptural or any other relation of facts touching the serpent. That all intelligent druids recognised it as a consecrated sign of the infinite all-pervading Spirit. That the construction of all druid temples in Britain, Gaul, and Germany, were in their essential characteristics the same as those of Greece, Egypt, and Asia, in which the serpent was recognised as a symbol only, not as an objective god. That the druids were the same as the sophi amongst the Greeks, the magi amongst the Persians, the gymnosophists amongst the Indians, and the Chaldeans amongst the Assyrians, and that a correct meaning of all the chief terms and objects and ceremonies had a reference to the solar orb and its relative position in the heavens, its daily rising in the east being one of the most striking and significant. Hence all temples from the present to the most remote periods, have their most holy place at the east end. In relation to the druid temple of Abury, it was pointed out that while Stukeley derived from "Hakpen", a compound word of Hak, a snake, and pen, the head, Mr. Deane contended that hags and hagworms are names for snakes in Yorkshire to this day; but on the authority of Bailey, it was shown that hags also meant "fiery meteors", and pen, "the top of a mountain"; hence it was not unwarranted that the name was given from its consecration to the fiery orb of day. This was all the more striking from the fact that Stukeley, Hoare, and Deane all agree that the meaning of Silbury Hill, is "Hill of the Sun." The druids were in reality northern magi of the solar divinity whose

eastern temples are still the wonder of the world, and that those who worshipped in them looked beyond the emblem of the serpent, beyond the solar orb, to the common Father of the universe, who dwells not in temples made with hands.

The meeting then separated.

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## ANTHROPOLOGICAL MISCELLANEA.

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*What am I? A popular Introduction to the Study of Psychology.*  
By EDWARD WILLIAM COX, Serjeant-at-Law. Vol. I. *The Mechanism of Man.* London: Longman and Co. 1873.

MEMBERS of the legal profession do not very frequently favour us with treatises bearing on subjects connected with anthropology or psychology; and yet lawyers have, of all persons, the fullest opportunity of obtaining an acquaintance with human nature in all its various phases, more especially as regards the exhibition of mental and moral characteristics. To the medical practitioner, the material man more immediately presents himself for observation. Nevertheless, medical men have been far more prolific than lawyers in the production of works relating to mental science. We rejoice, therefore, to see the subject before us taken up by a writer who has the means of regarding it from a new point of view, and whose opportunities of observing human nature in some of its most striking aspects, such as the varied exhibitions in the law-courts, both civil and criminal, constantly present, have been both extensive and diversified.

It has for some time been a reflection on societies devoted to the study of anthropology, not only in this country but on the Continent, and in America also, that material man too much engrosses their attention, to the exclusion of that which is mental, and which necessarily constitutes the higher branch of the system. The facts, however, which the study of material man furnishes, do much to supply matter for the advantageous and sound investigation of mental topics; and, in the case of the Anthropological Institute of Great Britain and Ireland, the recent establishment of a department expressly devoted to the study of psychology ought, at any rate, to exonerate it from this censure.

Mr. Cox, in the preface to his work, remarks that "the nineteenth century sees us but little better acquainted, *scientifically*, than we were in the ninth century, with mind and soul, their structure, functions, and capacities, and their relationship to the body, to each other, and to the world in which they exist," p. vii. The "gathering together of facts"; and "trying them by experiments", he points out as the remedy for this state of things. Phrenology he considers, and perhaps rightly, gave the first great impulse to psychological inquiry, by transferring the study of mind from metaphysics to physics. But surely, independent of phrenology, the course here so judiciously recommended may be, and has been, pursued.

The subject of the present work is divided into two parts. The first part, comprising vol. i, is devoted to a description of the human mechanism—body, mind, soul—merely as it is constructed. The second part is devoted to a description of the machinery in action, embracing all the phenomena of intellectual existence, as distinguished from purely organic life. There is of course, and almost necessarily, much in this work that is purely speculative, and much also, which is doubtless more valuable, that is highly suggestive. In this respect, the writer may be acting as a pioneer to those who shall follow him in his researches, and may point the way to future investigation and future discoveries in the science.

In chapter iv, "How we grow," Mr. Cox ventures, "with all deference to the scientific world," on a suggestion "that the body is constructed by the nerve-system; that the nerves attract to themselves those particles contained in the blood that are fitted for the particular structure to which each nerve belongs; that this formative influence extends to a certain distance from the nerve by varying lines of force; and thus it is that all the various shapes of limb and organ are modelled," vol. i, p. 23. Analogous instances, he remarks, occur even in inanimate nature. A "formative influence", of this sort, we may observe, was attributed by some writers of the sixteenth century to the soul itself. "The germ" he suggests to be "a miniature nerve-system, so infinitely small as to be beyond the penetration of our most powerful microscopes"; and he concludes that "a man is really a nerve-system clothed in flesh, and not, as we are accustomed to think of him, a structure of bones and flesh permeated by nerves, and shaped by some external formative force whose source and action are equally unknown to us," pp. 23, 24.

As to the inquiry originated in chapter v, "How we live," as to "what is the force that sets the machine in action and keeps it moving," Mr. Cox replies by terming it "vital force, because it appears to begin and end with the life of the body—if, indeed, it be not the life itself," p. 38. This vital force (as has by other writers been supposed with regard to life itself), he suggests, may be allied to magnetism or electricity. This vital force, he tells us, "has its seat in the nerve-centres, and flows from them, permeating the whole body, and conveyed by the nerve-system," p. 43. He also states that "the intelligence at the centre receives its information of impressions made by the world without through special faculties called the senses," *ib.*

Mr. Cox acknowledges himself unable to suggest a solution of the mystery "what life is"—a mystery which Coleridge endeavoured, though very unsuccessfully, to unfold, but of which he thought that John Hunter had a perception, although he wanted terms in which to express his meaning.

Chapter viii, "On the Germ," contains the following remarkable, novel, and original suggestion, which we give in the author's own words, and must leave it to each reader to form his own opinion as to its truth and its value. After assuming that every individual life has its origin in a germ, and that two parents are necessary to the vivification and expansion of that germ, he proceeds as follows:

"The suggestion which I venture to throw out for the consideration of physiologists is, that instead of being constructed of one germ, proceeding from one parent only, and either nursed or vivified by the other parent, (as has hitherto been universally assumed), we are really constituted by the *union of two germs*, a germ being provided by each parent. I further suggest that this duplex origin is the cause of that duplex character of the structure, which surprises the anatomist and puzzles the physiologist" (pp. 67, 68).

He further remarks on this head, and in support of his hypothesis :

"The human structure is not one whole, but two parts joined together. One of the parts rarely, if ever, precisely resembles the other part, and often there is a marked unlikeness. Seldom are both sides of the face alike, as a very slight observation of the reader's friends will assure him. One side of the body rarely, if ever, resembles in shape the other side of it ; one side is usually weaker than the other, or more liable to injury, or habitually less healthy. The external organs are all obviously duplex. We have two arms, legs, eyes, ears, nostrils. We have also two brains and duplicate ganglia. Throughout the structure there is the manifest junction of two distinct formations, and the point of junction is for the most part plainly visible. . . . Such a structure seems to be inexplicable on any theory of the development of a single germ" (p. 68).

We do not pretend now to express any opinion upon this singular and ingenious hypothesis, which may, at any rate, afford a theme for fruitful discussion before some scientific body. If this duplex germ is the product of the two parents, is one part of it to be supposed to belong to or to originate from one parent, the other part from the other? And is it to be inferred that the leading characteristics of the male are exhibited by the organs, more particularly the limbs, on the right side of the body, which display more force and energy than those on the left ; while those on the left are characteristic of the female sex? But there are many animals which do not possess this duplex organisation, and some of them possess it only in part. Plants, too, in which sex is existent, are destitute of it. Mr. Cox, however, "suspects" that "this suggestion of a double germ by the union of two distinct germs, each parent providing one, will be found on examination to be equally applicable to vegetable life, and equally capable of solution of the problems of vegetable as of animal physiology" (p. 79).

Those who are desirous of following up this interesting though very perplexing subject, we must refer to Mr. Cox's book, where it is discussed at length ; and the admitted difficulties in the way of this novel hypothesis are dealt with ably and ingeniously, if not altogether satisfactorily.

A good many physical as well as psychological topics are discussed in the work before us, but principally those which bear upon the former. For instance, disease and death, their causes and their nature, are treated at length in chapter ix, "How we die," which concludes with an enquiry into the nature and essence of intelligence.

An interesting topic, well suited for discussion before a scientific body, and where facts might be adduced tending to its elucidation, is started at p. 117, as to whether the same senses convey the same impressions to all people alike. An examination of animal nature will probably conduce to aid the settlement of the question. A difference in texture and temperament must also necessarily occasion a difference in the material organs of sensation. The instance of the noise made by the discharge of a gun (p. 117), is perhaps not altogether a satisfactory one to decide the fact. In the case of musical sounds, the relative possession of taste and feeling must contribute much to vary the effect, if not the nature of the impressions in different persons. In the chapter on hearing, Mr. Cox remarks that it is not merely possible but probable, that different animals may have different perceptions of sound; may hear sounds that are inaudible to us, and may be deaf to sounds we hear" (p. 124).

Chap. xvii is devoted to a discussion of the nature of "Life," in which is considered the universality of life, which our author deems to be "merely a condition of matter when combined in a special manner, which we term organic" (p. 141). Life he observes, or rather argues, "does not quit the body, it merely ceases." (p. 143).

Several other topics are embraced in this work, which are of interest alike to the physiologist, the psychologist, and the anthropologist. The principles of the materialists are examined into, and are handled with some severity. Phrenology is also discussed; and our author appears to entertain a very high idea of it as a complete mental system (p. 167). In fact, there are very few subjects of the nature alluded to, that are not here touched upon, and we only regret that the limited amount of space allowed to the examination of works of this description, utterly precludes us from more extensively following the author through the wide range which he has pursued.

It is of course very difficult to pronounce a critical judgment upon a book of this description, devoted almost entirely to the discussion of speculative topics, respecting which no certain conclusions can be even hoped for, and concerning which, perhaps, each reader will differ from the other, and that in every possible way. Suggestion is probably the utmost that the writer can accomplish while handling these very perplexing themes; and in judiciously effecting this consists the real value of such an undertaking. The work before us, though in parts it is obviously somewhat hastily written—and a life would not be too much to devote to a book on these great subjects, and which embraces so many of them—is, nevertheless, doubtless one of considerable value of its order. It displays deep philosophic thought, much ingenuity, and thorough independence, candour, and moral courage in conducting the enquiries instituted.

ON THE PROBABLE EXISTENCE OF MAN DURING THE  
MIOCENE PERIOD.

Constantinople : March 12th, 1873.

DEAR SIR JOHN LUBBOCK,—Enclosed is the copy of a paper which my brother, Mr. Frank Calvert, has sent up for insertion in the "Levant Herald," requesting me, at the same time, to forward you a copy of the number in which it appears.

This I shall do ; but since it cannot appear in time for this mail, I have thought it as well, meanwhile, to let you have the paper in MS., in case you should like to give it publicity at home yourself.

You will observe that the announcement it contains is of very great scientific interest.

Very truly yours,

EDMUND CALVERT.

Sir John Lubbock, Bart.

[COPY].

I HAVE had the good fortune to discover, in the vicinity of the Dardanelles, conclusive proofs of the existence of man during the Miocene period of the tertiary age. From the face of a cliff composed of strata of that period, at a geological depth of eight hundred feet, I have myself extracted a fragment of the joint of a bone of either a dinotherium or a mastodon, on the convex side of which is deeply incised the unmistakeable figure of a horned quadruped, with arched neck, lozenge-shaped chest, long body, straight fore-legs, and broad feet. There are also traces of seven or eight other figures which, together with the hind quarters of the first, are nearly obliterated. The whole design encircles the exterior portion of the fragment, which measures nine inches in diameter and five in thickness. I have also found in different parts of the same cliff, not far from the site of the engraved bone, a flint flake and some bones of animals, fractured longitudinally, obviously by the hand of man for the purpose of extracting the marrow, according to the practice of all primitive races.

There can be no doubt as to the geological character of the formation from which I disinterred these interesting relics. The well-known writer on the geology of Asia Minor, M. de Tchihatcheff, who visited this region, determined it to be of the miocene period ; and the fact is further confirmed by the fossil bones, teeth, and shells of the epoch found there. I sent drawings of some of these fossils to Sir John Lubbock, who obligingly informs me that having submitted them to Messrs. G. Busk and Jeffreys, those eminent authorities have identified amongst them the remains of dinotherium, and the shell of a species of melania, both of which strictly appertain to the miocene epoch.

In addition to these discoveries, and at about ten miles distance from the above locality, I have lately come upon other traces of



man's existence in drift two or three hundred feet thick, underlying four or five hundred feet of stratified rocks. I cannot positively affirm that this formation is likewise miocene, the fossil shells it contains not having yet been examined scientifically; but in all probability such will prove to be the case. Throughout this drift, I have found numerous stone implements, much worn. Flint is comparatively rare, but other hard stones have been adopted, jasper, of red and other colours, being predominant. Some of the implements are of large size, and weigh upwards of nine pounds.

It is not more than forty or fifty years since the possibility of man's having come into being at an earlier period than the received term of six thousand years was first discussed; and it is only quite recently that geologists, upon the evidence furnished by the quaternary drift, are agreed to assign him an antiquity of about one hundred thousand years. Some suspected traces of his existence have indeed been noticed in the pliocene and miocene formations, but not sufficiently marked to be conclusive.

On this subject, Sir John Lubbock, in his "Prehistoric Times", says, "whether we have conclusive evidence of the existence of man in miocene times is a question on which archæologists are still of different opinions. Sir Charles Lyell himself thinks that we may expect to find the remains of man in the pliocene strata, but there he draws the line, and says that in miocene times, 'had some other rational being representing man, then flourished, some signs of his existence could hardly have escaped unnoticed.' . . . It seems to me evident that the argument derived from the absence of human remains, whatever may be its value, is as applicable to pliocene as to miocene times. . . . The imperfection of the geological record has hitherto been urged upon us almost as strongly by Sir C. Lyell as by Dr. Darwin. It is true that few of our existing species, or even genera, have as yet been found in miocene strata; but if man constitutes a separate family of mammalia, as he does in the opinion of the highest authorities, then, according to all palæontological analogies, he must have had representatives in miocene times. We need not, however, expect to find the proofs in Europe; our nearest relatives in the animal kingdom are confined to hot, almost to tropical climates, and it is in such countries that we are most likely to find the earliest traces of the human race."

M. Louis Figuier, in his "Primitive Man", observes, "Some geologists have supposed that traces of the presence of man in the tertiary formations (miocene and pliocene) have been found. But this is an opinion to which we cannot assent. . . . It is in the formations belonging to the quaternary age, that convincing and incontestable evidence of the existence of man is to be found. The date of the first appearance of mankind on the earth, must therefore be restricted to the quaternary period prior to the contemporary geological era."

The discovery which I have been so fortunate as to make, now sets this question at rest. It may be mentioned for the information

of the general reader, that the drift of the quaternary age to which the known vestiges of primitive man have been hitherto confined, forms on the earth's surface as it were a mere superficial crust; but below it, underlie in succession the vast thicknesses of the new and old pliocene and miocene of the tertiary age, to which last my discovery now carries back the existence of mankind.

The remarkable fact is thus established beyond a question, that the antiquity of man is no longer to be reckoned by thousands, but by millions of years.

I shall abstain from making further researches in the place where the engraved bone was discovered, until I can do so in the presence of persons well-known to the scientific world, who, I trust, may be tempted to visit the spot.

(Signed)

FRANK CALVERT.

Dardanelles, 8th March, 1873.

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*The Ainos and Japanese.* By HERR VON BRANDT, Consul General of the German Empire for Japan.\*

JAPANESE sources give little or no information as to the aborigines of the country. Whilst some see in the present inhabitants the descendants of the aborigines, whereby, indeed, they do not solve the riddle of the contemporaneous appearance of the Ainos on the Japanese islands, others derive the population of the country from Chinese immigrants, and go so far as to place back the first colonisation of Japan in the year 2697 B.C. It is the old story of the physician, who received from a tyrannical emperor the command to search for the tree of everlasting life, and who made use of the opportunity to withdraw himself from the power of his master. He demanded fifty young men and fifty maidens as an escort, and with these he founded the first colony in Japan. All the later Japanese authors incline to the supposition that the country was inhabited by an original race, who were in the lowest stage of culture, and with whom a trace of political government is met with only so far as those who, distinguished by peculiar bodily strength or mental capacity were considered during their lives as superior beings, after their deaths came to be revered as gods. The most important of these chieftains was *Djin-mu*, who afterwards became the first Japanese ruler.

That nothing useful can be constructed out of such materials is evident. We may consider that the old Kœmpfer has come the nearest to the truth. In his "*Amœnitates Exoticæ*," he speaks of immigrants from Tartary, who were said to have lived a long while dispersed in the country: "*Diu latuerunt obscuro nomine e Dalz seu Tartaria hospites in Japonia*," until finally, contemporaneously with the foundation of the Roman Empire, the Japanese Empire was established under the first Mikado.

\* Translated from the "*Verhandlungen*" of the Berlin Society for Anthropology, Ethnology, and Archæology. October 1871 to November 1872.

As to my own opinion, it is that not only the Japanese islands, but also a part of China and the Corea, were inhabited by one and the same race—the Ainos (who were called by the Japanese in historical times *Yebis* or eastern barbarians), and that at a later period these were pressed back by advancing peoples of another race to the north and east, so that at the present day they are found only in a small number on the islands of Yezo and Saghalien and the Kuriles. In favour of this originally greater expansion of the Ainos, is a report of the Baron von Richthofen, read in April 1870, before the Geographical Society of Berlin, according to which, Herr von Richthofen, on his visits to Kaoli-Mon, the Chinese-Korean trading-place on the border of the two kingdoms, has observed among the Koreans two distinct types, one that of the officials and merchants, with a rather long head, the other an inferior one, reminding us of the savages of North America and the Ainos, with a broad head. On my visit to Tsau-liang-hai (Fusong) in South Corea, in the year 1870, no such typical difference struck me; the Koreans, whom I there saw, belonged wholly to a single class of the population, and had fine vigorous forms with long heads, and would therefore be counted among the first of the before-mentioned types.

The first historical notices which we have respecting the inhabitants of Japan go back to the year 660 before Christ, and give an account of the conflicts through which Djin-mu, the first Mikado, raised himself to the position of chief ruler of the land. What appears to be certain is that these conflicts did not take place between later immigrants and the aborigines, but between different people of the same race, which already some hundreds of years earlier had immigrated into Japan, and driven the aborigines back into the middle of the island Nippon. Everything speaks for this supposition, but particularly the fact that Djin-mu's final triumph was obtained, not by force of arms, but by peaceful treaty, in which the conqueror acknowledged the equal divine origin of the conquered and secured to them and their descendants great honours; such an agreement could be concluded only among peoples of the same race. Whence these immigrants originated can be finally settled only by comparative philology; but many things already indicate that their original home must be sought in inner Asia, perhaps near the cradle of the Aryan stock. The Japanese authorities, as usual, leave us in the dark; individual writers, indeed, speak of a connection of Djin-mu with the ruling-house of the Liu-kiu Islands, and in Europe also the opinion of a peopling of the Japanese islands from the south has been repeatedly stated, but it appears more than improbable that such an intercourse should have taken place between Japan and Liu-kiu, since the first mention in the Japanese annals of intercourse with Liu-kiu occurs about thirteen hundred years later.

Much in the old rites and customs connected with the religion of Japan indicates that these first immigrants had been of Asiatic, perhaps of Aryan origin. The old religion of Japan, the *Sin-to* or *Kami* cult, was originally a fire and star worship, out of which by degrees

has been developed a worship of gods and heroes. The Japanese, like most other peoples, have found it more convenient in their progressive development to divide the divine original power (*urkraft*)—in this case the light, the sun—into its individual parts, and for each of its attributes to institute a particular saint as intercessor (*fürbitter*). In time the number of these intercessors, partly mythical persons, partly men canonised by the Mikado, increased to an infinite number; but the ancient cult, with its rites and requirements, the pollution by contact with sick and dead people, the necessity for purification by fire and water, and sometimes also by salt, before prayer or entering the temples, the use of drink offerings before the images of the saints prior to taking meals, the annual purification of the temple utensils and buildings with hot water, the occurrence of the masculine and feminine principles, which at first united afterwards appear separated, and symbolically are represented in Japan by a staff and a strip of paper, as elsewhere by the sword and dragon, the staff and lozenge, &c., all these indicate a fundamental connection of the Sinto cult with the ancient Chinese religion, with the worship of genii, and the state religion ruling now even in the Corea, which is said to be likewise a worship of spirits derived from a pure nature worship. As regards funeral ceremonies the likeness between China and Japan is undeniable. The custom of burying with dead generals their servants, horses, &c. continued even to the time of Confucius. At a later period, in the place of these living beings and of objects destined for real use, were substituted paper pictures which represent carts, horses, boats, clothes, money, etc., and which have to serve the dead on his journey into the other world. This custom has continued to the present day. All over Japan we find the same custom. Up to the year 5 before Christ, all the servants and furniture of the emperor and high personages were placed in the grave with them on their burial, and when the Mikado Sui-Niu in that year abolished this custom, because he could not bear to hear the lamentations of the men who were buried alive, in the following year the placing of earthen figures in the grave was on the burial of his wife substituted for it. So firmly, however, was the old custom rooted, that still for above fifteen hundred years men of the soldier class considered it a point of honour to commit suicide on the graves of their chiefs, or to mutilate themselves by cutting off some of their limbs, and the Tycoon Iyeyasu even in the year 1600 after Christ was, on the publication of the so called Hundred Laws, obliged to forbid this habit under threats of the severest punishment.

The use and signification of the red colour appears also to indicate a connection between the east and the west. While the rulers of the west wear red garments as marks of their dignity, and claim that colour for themselves, the Emperor of China writes his edicts with the red pencil, that is, with red colour, and the coffins of the deceased Mikados were covered with red, that is, with cinnabar. The form and the choice of the place of the tombs of the rulers appear also to show a connection; these are always situated on the slopes of hills, and often surrounded by a mound and ditch like a fortification.

I am sorry that little information can to the present time be derived from the ornamental objects and weapons found in the graves, which appear to belong to a later period. As for the weapons, these are of stone, arrow heads, chisels, knives, hammers, quite in the form and workmanship of the present time; but stone arrow-heads are still made use of in Northern Japan, and I have even in Yezo seen stone hammers and hatchets among the Ainos. The ornaments, the *kudatama* and *magatama*, indicate a period of already more highly developed culture. The latter, worked out of stone, crystal, etc., appear to be imitations of animal teeth, and have perhaps at a later period taken the place of real teeth; the former, somewhat elongated little tubes, perforated in the long axis, usually very well worked, and formed of glazed clay, were together with the *magatama* worn as necklaces, and date from a more recent period.

In order once more to concentrate in a few words my views as to the origin of the present inhabitants, the Japanese islands appear to me to have been inhabited first by the Ainos, the aborigines or very early immigrants; later, but still in prehistoric times (using this phrase in relation to *our* historical knowledge), other immigrants from the Asiatic continent pressed forward, and drove back the Ainos to the north and east. Like all Asiatic peoples, the invaders fixed their chief town, Miako, in the border territory, in the province Yamato, the cradle of the ruling family. Quarrels broke out among the conquerors, which after many conflicts, terminated in the re-establishment of the sole sovereignty of the Mikado. Afterwards, according to history, first in the year 32 B.C., immigrants came from the Korea and China, and from these three elements, the Ainos as the first immigrants, and the later Chinese and Japanese immigrants, has the Japanese nation, as we know it, been formed. Probably the type of the first immigrants has been preserved the purest in the ruling family and in the families of the highest class (*Kuge*), at least their complexion is usually whiter than that of the other Japanese, and the form of the head and the lineaments of the face are superior. Traces of admixture with the Ainos are observable, especially in the north of the island of Nippon, where they have maintained themselves the longest, and where, therefore, contact with them has been the most frequent.

The Ainos have not abandoned the field to the new comers without severe conflicts. According to Japanese authorities, the *Yebis*, as they were called, in the year 110 A.D., still dwelt in Suruga, south of the 35th degree; in the seventh century they were in the almost exclusive possession of the country north of the 38th degree, and even after the pretended submission of the whole of the island Nippon to the chief authority of the Mikado in the ninth century, the annals still relate continual rebellions and invasions of the eastern barbarians.

The Ainos, in spite of this contact, continuing for thousands of years, have adopted nothing from the Japanese; they are what they were, a race standing at the lowest stage of culture, and probably



also not capable of civilisation; who, like so many other aborigines—as the dark inhabitants of Ceylon and Formosa, the natives of Australia, etc.—cannot bear the contact with a foreign higher civilisation, and perish in consequence of it. If this process has endured thousands of years in Japan, and is not yet terminated, the reason may be, that the race of the Ainos has always found space for extension to the north. Indeed, sixty thousand Ainos still perhaps live in Yeso, and a much smaller number in Saghalien and the Kuriles, but the spreading southwards of the Russian sovereignty, and the gradual, if slow, cultivation of Yeso by Japanese emigrants will, together with the small-pox and spirituous liquors, soon cause the last traces of the most ancient inhabitants of Japan to disappear. Moreover, there exists a great difference between the Ainos of the west and of the east coast of Yeso; whilst the former make a melancholy and miserable impression, and are treated by the Japanese as complete serfs, the latter are a cheerful people of hunters, fishermen, and shepherds, who wander during the summer into the interior of the island, and bear themselves with much more freedom and ease than their brethren on the other coast.

As concerns the Ainos themselves, they are of middle height, strongly built, and have dark rather woolly hair, which is shaved from off the forehead, and stands out at the sides; their eyes are dark, and often brown; the complexion of the young people light bronze colour, that of the old almost white; the beard is very strong and not shaven. Their hairiness is not so great as one would conjecture, from the name "hairy Kuriles"; individuals were very hairy on the breast, arms, and legs, but not more so than can any day be seen among ourselves. The lips are slightly projecting; this being in later life concealed by the beard. The expression of the face is good-natured. On the whole, they reminded me of the representations of many peoples of the South Sea Islands. The women are tattooed blue about the mouth, with the figure of a turned up moustache, which makes them very ugly. The first tattooing usually takes place in the seventh year, and is then gradually increased. On the east coast I have seen women with lines placed crosswise on the arms. The women wear earrings of metal, imported from Japan, and collars of blue cloth, on to which are sewn little leaden stars and pieces of glass, sometimes also of glass beads or small fruits. The clothing of both sexes consists of a yellow bast dress with blue ornaments; the dress is called *atsusi*, from the tree *ats* (in the Aino language), from the bark of which it is prepared.

The behaviour of the Ainos, at least so long as they are under the eyes of the Japanese, is very submissive, and their manners are not without grace. If I presented them with tobacco or glass beads, they were called into the yard, where they sat themselves down in a row with crossed legs, their eyes cast down. The eldest, at the right side, acted as the spokesman, spoke with a very low voice, whilst all looked to the ground. At the conclusion of the thanksgiving, they raised their open hands, the palm inside, towards the face, which

they slightly incline, and then, whilst the end of the left middle finger touches the highest inner joint of the right middle finger (the touching of the second or the third joint is evidence of less respect), they stroke down the beard with the flat hand; the beardless on the left side of the hair (the shaving of the forehead takes place first on the appearance of puberty, that is, in the fifteenth year). The younger ones still continue to sit with eyes cast down.

The villages of the Ainos, seldom containing more than from two hundred to three hundred souls, frequently much less (in the interior there are said still to be independent tribes, but I have not seen them), are usually situate pretty near to the sea. The miserable huts stand irregularly near each other, and are built with posts and reeds in a longish oblong form, four to five feet in height, with a square roof equally high. They have no special opening for the escape of smoke, but only a small square door and a similar window aperture. Near each hut stands a storehouse, a square-pointed roof of reeds on posts, erected about four feet above the ground; the posts are covered with a piece of bark bent downwards in order to keep off the rats and the mice. An adjacent tree-stem, with steps hewn in it, serves for the purpose of ascending. Opposite to the huts, sometimes in a row, bears' skulls, which the owner of the hut has obtained, are fastened on forked branches placed together. Near one hut were nineteen stuck up, the fresh ones appeared to be placed at the top; from some of them still hung pieces of skin and flesh. The Ainos were not willing to sell them, and showed for them, as for the foxes' skulls which are preserved in the huts, a kind of idolatrous veneration. Perhaps this exhibition of the skull, which takes place with certain ceremonies (as the drink-offerings which are presented to them on special occasions), is a kind of atonement-offering, in order to propitiate the spirits of the slain bears. The drink-offering, which also takes place before each meal, is so presented that the Aino takes in the left hand the cup containing the Saki (Jap. rice brandy), and in the right a flat stick, about half an inch broad and a foot long, ornamented with carved work; with the stick he stirs up the beverage and so allows some drops to fall two or three times on the earth, whilst he raises his hand with the stick as high as his head; then he lifts up his moustache with the stick and empties the cup.

In the neighbourhood of the huts, opposite to those of the late inhabitants, as it seems, lie the graves scattered over the plain. The head lies to the east, and at this end of the coffin, which consists of thin boards and is only slightly covered with earth, is fixed for the men a spear-head shaped piece of wood, about three feet long, and for the women a low cross-piece, with a small strip of blue cloth fastened to it. On the graves of the women are placed broken pots. The huts and the whole household property of the deceased are said to be burnt on the death of the owner, so that he may leave behind nothing that he could regret; the poor are said to be buried without a coffin, but all their weapons are placed in the grave.

The bows of the Ainos, their chief weapons, are short and very

strong, made of pine wood ; they hold them horizontal for shooting. The arrows are short and thick, made of pine wood or cane, and very badly ; sometimes even not feathered. The points are of cane, sometimes of metal, very badly fastened, and always furnished with a deep blood-groove, in which a very deadly poison is placed. I have not been able to procure it. The Ainos affirm that it is always obtained in autumn, from the knots of a plant, in their language called *shirnún*. When fresh, it is said to work so quickly, that a wounded bear, although the arrows are so poor that they cannot produce a deep wound, falls after a few steps. The poison is said not to produce any hurtful consequences when the flesh is eaten. Their knives—larger ones, sabrelike, and smaller ones—are very poor, and are imported from Japan ; the sheaths are broad, made of wood, and ornamented with rough carvings, and sometimes black-coloured linear decorations ; brown bark rings are added as ornaments to some sheaths and handles.

The art-skill of the Ainos is generally of a very inferior character ; except tobacco boxes, pipe cases, and flat sticks for beating cotton, the knife sheaths, bows, arrows, and clothes, everything, even their eating utensils, is imported from Japan. In general, the Ainos are at an incredibly low stage of culture ; they have no written language, and preserve the remembrance of important events by notches in wood or knots on cords. They appear to have no religious rites besides the above-mentioned ceremonies connected with the skulls of bears and foxes ; as little have they priests or any musical instruments.

Their family life and their constitution, if one dare make use of that expression, are quite patriarchal. The men marry only one wife ; concubines are unknown. The marriages take place for the men at from the eighteenth to the twentieth year of age ; for women at fifteen years, without any ceremony but a drinking feast ; so it is also at the birth of a child, which according to Japanese custom receives a name half a year later. The oldest men of the small branch (which, as I was told, only marry among themselves), exercise a kind of oversight. They are usually confirmed by the Japanese authority, obtain on certain occasions robes of office, and are presented to the governor of the island.

The Ainos of Saghalien are said to be more wealthy and civilized than those of Yezo, who alone I have seen ; but I believe that this appearance is chiefly occasioned by the embroidered clothes and shoes imported by the Chinese, the latter sometimes of seal skin.

What will become of this people, now approaching extinction, cannot be foreseen ; in a few decades they will have disappeared, and as they will leave no memorials behind them, it is desirable now to collect as much information about them as possible.

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#### THE HAMATH INSCRIPTIONS.—ALPHABETS.

SIR,—Mr. Wake's allegation happens to involve a confirmation of my views, and not an objection to them.

The Tuarick or Berber written character is, it is true, still in use; but that does not determine the date of its prototypes to be modern, as he believes. The Berber is the successor to the Lybian, in which there are bilingual inscriptions, both Phœnician and Roman. In the British Museum is the famous Phœnician bilingual, the Thugga or Tuca stone. I pointed out in a paper to the Royal Asiatic Society, besides † and other resemblances, which may be casual, the occurrence on the Thugga stone of = or ||, as in Hamath and in Babylonian hieratic and arrowheaded. In Lybian and cuneiform arrowheaded = is the symbol for *son*, and so rendered in the Phœnician on the Thugga stone.

† I believe to be, in some cases, the equivalent of \*, the determinative for God or king, and that from it was derived the square-headed ☒.

As the Hamath, the Cypriote, the Himyaritic, and the Lybian contain characters having a resemblance and differing from the Phœnician, I have propounded the idea that there was an alphabet older than the Phœnician, propagated through distinct channels, and originating in Chaldæa.

Cuneiform scholars do not favour this opinion, and it is not in conformity with old ideas, but it is the one which best suits the facts of the history of civilisation. If true, it antedates the invention of a short alphabet.

Your obedient servant,

HYDE CLARKE.

P.S. Since writing the above, I have received the "Palestine Exploration Journal", containing an article of M. Clermont-Ganneau, on the additional inscriptions found at Aleppo. This palæographer entertains views identical with mine, as to the nature and comparative chronology of the characters, and proposes for them the name of Syrian. In the same number are some criticisms of the Rev. W. Wright, of Damascus, on my observations, but they do not need reply.

HYDE CLARKE.